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Scale and Skill in Mutual Fund Management: Evidence from Norway

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Abstract

Using a sample free of survivorship bias and several risk-adjusted performance benchmarks to identify effects of scale on mutual fund performance in the Norwegian market, I find mixed evidence that both large and small funds underperform as against the middle-sized funds in the period 2005-2018. Controlling for relevant factors in panel data regressions, I find that, on average, performance worsens with an increase in size while giving support to initial findings of nonlinearity. The relationship is most robust after 2013 and seems to be affected by competition in the market as well as fund inflows. I do not find any empirical evidence to support the liquidity hypothesis.

Introduction

The Norwegian Mutual Fund industry has been growing at remarkable rates since the financial crisis of 2008 due to low-interest rates, new pension regulations, and increased availability and knowledge (VFF, 2018). This raises the question of how stakeholders adapt to the increases in scale and should be of particular concern for investors trying to pick the best performing mutual funds. This study provides the first evidence to my knowledge of how the size of a Norwegian mutual fund's asset base affects future performance through several risk-adjusted measures.

Active mutual funds are found to underperform passive strategies after costs on average, and performance is not persistent over time (Carhart, 1997; Fama & French, 2010; Jensen, 1968). Nevertheless, investors choose to trust managers in allocating their assets. This paradox has puzzled practitioners and researchers alike for years, bringing mainly two questions: Why do active funds underperform their benchmarks? And why do investors still choose them? This study aims to increase understanding by answering the following two questions: Does the size of a fund's asset base affect risk-adjusted performance among Norwegian mutual funds investing in Norwegian equities? Are there any factors affecting the relationship between size and performance?

Many authors have contributed to developing some consensus on the role of fund size. Studies on funds in the US mainly show that fund performance worsens with size due to increased trading costs from liquidity issues and price movement (J. Chen, Hong, Huang, & Kubik, 2004; Pástor, Stambaugh, & Taylor, 2015; Perold & Robert S. Salomon, 1991). However, the relationship is nonlinear as performance increase with size due to better resources, before decreasing as funds experience higher transaction costs, more attention, and administrative stress (Indro, Jiang, Hu, & Lee, 1999). A cross-sectional study compares findings in the US to 26 other countries spanning from 1997-2007 ((Ferreira, Keswani, Miguel, Ramos, & Finance, 2012). They find that the diminishing return to scale is not universally true outside the US, although the results are aggregated and therefore makes it hard to conclude. There are some studies on the performance of Norwegian mutual funds, however to the best of my knowledge, none have specifically investigated the size-performance relationship. At the end of 2018, around 240 companies were listed in Norway, having a market capitalization of about USD 267 billion. As fewer stocks make it harder to diversify, I expect liquidity to be a bigger problem in Norway than in the US, possibly translating into a stronger negative size-performance relationship. Factors such as the size of the mutual fund industry and the concentration of its competitors are also expected to affect performance. With more (less) money chasing mispriced assets, a higher (lower) price pressure is to be expected, although it might also bring positive incentives to perform. It might also be that the size of the fund's owning company plays a role as more prominent families have more resources and organizational possibilities. Financial intermediaries are introducing success fees, which makes identification of drivers behind the performance of increased importance both for managers and investors. This study contributes to the body of knowledge by identifying factors that should be considered by all participants and to provide more detailed insights into markets outside the US.

Theoretical Framework

One of the first attempts to explain expected returns about risk is the Capital Asset Pricing Model (CAPM) (Sharpe, 1964; Treynor, 1962). Assuming that investors have homogenous expectations and are trying to maximize returns for a given variance or to minimize the variance for a given return, the CAPM (Equation 1) postulates that the expected return for an asset less the risk-free rate will be equal to the market risk premium.

$$E[r_i] - r_f = \beta_i (E[r_m] - r_f) \dots \dots \dots (1)$$

The only risk factor in the model is the variance of the market, so the abnormal returns of the funds obtained by eliminating the market risk will be from the mispricing of assets in the market or other risk factors that funds

are exposed to. In addition to the market risk premium, researchers included the size factor SMB (Small-Minus-Big) and the value factor HML (High-Minus-Low) as well as the intercept term alpha (α) (Fama & French, 1993; Ross, 1976). Studying the alpha will be of interest in this study as it represents a funds' performance over the expected return estimated by the regression and its risk factors. The model was extended by introducing a momentum factor to adjust for an asset's tendency to continue rising if it is going up and continue declining if it is going down (Carhart, 1997).

$$E[r_{it}] - r_{ft} = \alpha_i + \beta_{iM} (E[r_{mt}] - r_{ft}) + \beta_{iSMB} r_{SMBt} + \beta_{iHML} r_{HMLt} + \epsilon_{it} \dots \dots \dots (2)$$

$$E[r_{it}] - r_{ft} = \alpha_i + \beta_{iM} (E[r_{mt}] - r_{ft}) + \beta_{iSMB} r_{SMBt} + \beta_{iHML} r_{HMLt} + \beta_{iMOM} r_{MOMt} + \epsilon_{it} \dots \dots \dots (3)$$

Where r_{it} is the portfolio return in month t , and r_{ft} is the risk-free rate in month t , α_i is the intercept term which represents the performance not explained by the other factors, $(r_{mt} - r_{ft})$ is the excessive market return, and SMB, HML, and MOM are size factor, book-to-market factor, and Carhart-momentum factor respectively.

Later on, two factors are added, namely profitability and investment (Fama & French, 2015), improving predictability, although it does bring some problems. The extended five-factor model fails to capture the low average returns of small stocks fully, and the investment factor is shown to be redundant in Europe and Japan (Fama & French, 2017). For this study, the dependent variable is net fund returns adjusted for risk using three different approaches: a three-factor model, a four-factor model, and a benchmark adjusted return variable. I do not use the five-factor model for my purpose as smaller stocks account for a big part of the Norwegian market, and one of the factors, i.e. investment, is shown to be redundant in Europe. The fund size is my independent variable, and I use eight different controls.

Table 1 - The variables and their calculation

Variables	Model Name	Calculation
Dependent Variables		
Excess Return	XRET3	Fund return - (Estimated returns from 12 months rolling window of Three-Factor Model)
	XRET4	Fund return - (Estimated returns from 12 months rolling window of Four Factor Model)
	XRET _{BM}	Fund return - Benchmark return
Independent Variables		
Fund Size	FDS	Log of the size of fund AUM at time $t-1$
Control Variables		
Fund Age	AGE	Log of the age of the fund
Expense Ratio	ER	Total Expense Ratio
Family Size	FAS	Log of the size of fund family at time $t-1$
Industry Size	IND	Log of the size of fund industry at time $t-1$
Concentration	CON	$HHI = \sum_{i=1}^N s_i^2$ where s_i = fund i 's market share. N = nr of funds
Mutual Fund Index	MFI	Dummy; 1 if TR Mutual Fund Index given as benchmark index
Small Cap Index	SCI	Dummy; 1 if TR Small Cap Index given as benchmark index
Manager History	MH	Dummy; 1 if change in management team at month $t-1$
Flow	FLO	$[TNA_t - TNA_{t-1} * R_t] / TNA_{t-1}$

Data and Methodology

To examine the effect of fund size on performance, I obtained the data from Thomson Reuter's Lipper and Datastream databases and Morningstar. The study includes monthly observations for 49 actively managed mutual funds with a Norwegian equity focus and spanning the period from January 2005 to December 2018. The asset universe is restricted to active mutual funds registered for sale in Norway with the Lipper Database classification of Equity Norway. These are funds with a primary focus on the Norwegian market and at least 80 percent of their assets invested in Norwegian equities, leaving some room for cash holdings. This excludes bond funds and other non-equity funds as well as index funds. All funds follow the European Union UCITS directives for investor protection which states that funds need to hold at least 16 different equities to ensure diversification and follow the 5/10/40 rule specifying a maximum of 10% of a fund's net asset may be invested in a single asset and that investments of more than 5% with a single issuer may not make up more than 40% of the whole portfolio (EuropeanParliament, 2014). To avoid survivorship bias, this study includes liquidated and merged funds for the periods for which they were active. This could only be done by using multiple databases as inactive funds did not have information about Total Net Assets (TNA) in the Lipper database. Utilizing an additional source, Morningstar made it possible to compare the data in the two databases, which gives added certainty to the quality of the data. No significant differences were found neither in TNA nor Net Asset Value (NAV) between the databases. Morningstar also provides additional relevant aspects to the dataset, such as manager history and a Morningstar fund category, which helps to classify the strategy of the fund. The sample starts in 2005, as this is the earliest reported monthly observations of TNA.

A fund may enter the dataset several times as the database reports different share classes for the same fund. Assuming that managers make decisions for the fund in its entirety and care less about the size of each class, classes of a fund are merged into one representative. TNA is summarized, and one of the classes' NAV is chosen to represent the fund, effectively making sure that each fund is represented only once. NAV is reported after costs and might, therefore, vary for different classes as institutional investors usually pay less than private investors. As every fund does not have institutional classes, the most expensive class is chosen to have comparable returns across funds. As a new class is introduced, a significant increase in the merged fund's TNA usually appears as it is launched with rather big investors. This might be a weakness in the data, but overall it may contribute to random errors, and it should not significantly affect performance the next month.

In the estimation of fund's factor loadings, returns over the risk-free rate are used. I used monthly averages of the nominal Norwegian Interbank Offered Rate (NIBOR), a commonly used proxy for the risk-free return in the Norwegian market. I obtained this data from Norges Banks' webpages for the period before 2013 (Bank, 2019) and from the Oslo Stock Exchange for the period after 2013 (Børs, 2018). As both sources link to each other for their respective periods, it is assumed that the data is calculated equally and can be combined to span the whole period.

Three and Four-Factor regressions are estimated from available NAV-data starting in 2004 as twelve months rolling averages to account for changes in risk exposure through time. Factor loadings from the regressions are multiplied with real factor returns every given month and express estimated return. Deducting this from the actual return gives the risk-adjusted excessive return and the dependent variables, XRET3 and XRET4. From the histograms and Q-Q plots in Figure 1, there seems to be a negative skewness in the Three-Factor Model, while the Four Factor Model seems to be closer to a normal distribution. A Shapiro-Wilk test for normality Shapiro and Wilk (1965) gives a p-value of 0.2567 and 0.2478 for the Three and Four Factor Model. These are both above the critical value of 0.05, indicating a normal distribution.

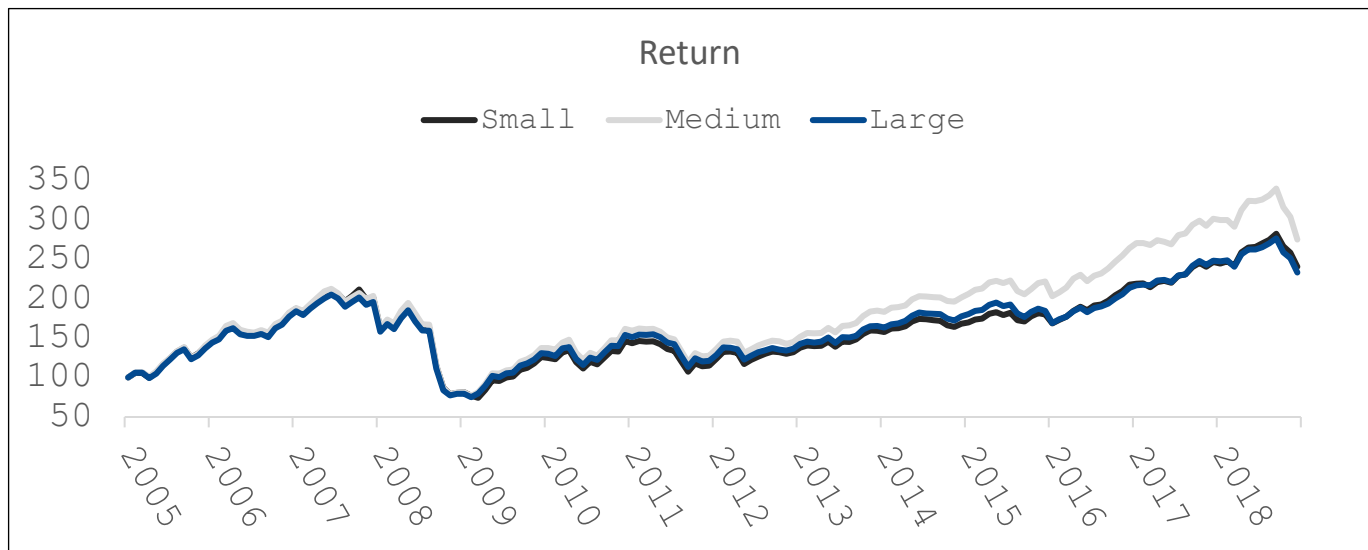


Figure 1 - Fund Groups Absolute Return

The third dependent variable (EXCRETM) is a benchmark-adjusted return, where the fund monthly net return is subtracted from the return on the fund's benchmark designated by the Thomson Reuters Lipper database. Three benchmarks are given, namely OSE Mutual Fund TR, OSE Benchmark TR, and OSE Small Cap Index TR. I summarize statistics for the three dependent variables in Table 2.

Table 2 - Summary statistics of dependent variables

Panel A: Three-Factor Model						
	Alpha	Rm-Rf	SMB	HML	MOM	adj. R ²
Small	-0.0003	0.918	0.115	0.003		0.827
Medium	0.0005	0.992	0.167	0.016		0.905
Large	-0.0002	0.966	0.114	-0.001		0.953
Panel B: Four Factor Model						
Small	-0.0002	0.899	0.106	-0.007	-0.028	0.825
Medium	0.0004	0.962	0.153	0.004	-0.006	0.910
Large	0.0000	0.949	0.110	-0.007	-0.026	0.953
Panel C: Benchmark-adjusted Monthly Return						
Small		0.0009				
Medium		0.0013				
Large		-0.0001				

Note: The table reports average factor loadings for the three fund groups. Alpha is the constant derived from the regressions, Rm – Rf is the market return in excess of the risk-free rate, SMB is the size factor (Small Minus Big), HML is the book-to-market factor (High Minus Low), and MOM is the momentum factor.

The Three-Factor Model produces marginally more significant differences in alpha values between the groups than the Four Factor Model. Market return over the risk-free rate is the most influential factor for all groups in both models, describing most of the variation in fund return. It is most reliable for the medium-sized funds, hinting that smaller and bigger funds have less systematic risk. SMB and HML account for less of the variation in fund return. Including the MOM factor only marginally reduce loadings on the other factors. Including the momentum variable in the Four Factor Model does not seem to improve adjusted R². Both models seem to explain most of the variation for all funds.

The dataset is unbalanced, and hence I apply pooled regressions and fixed-effects techniques using the following specification.

$$XRET_{xit} = \mu + \vartheta FDS_{it-1} + \gamma X_{it-1} + \varepsilon_{it} \dots\dots\dots(4)$$

where $XRET_{xit}$ is the return of fund i in month t risk-adjusted by three various performance benchmarks, μ is a constant (OLS), FDS_{it-1} is the log of fund i 's Assets Under Management (AUM) at month $t-1$, and X_{it-1} are relevant to control variables in month $t-1$, ε_{it} is the error term uncorrelated with all other independent variables, and ϑ is the main coefficient of interest as it captures the relationship between fund size and performance, controlling for the other variables.

The relationship under investigation is a challenge to estimate since the size is not randomly decided. While pooling the data assumes that the average values of the variables and the relationships between them are constant over time and across all the cross-sectional units, the skill of the fund manager impacts both the dependent variable performance and the independent variable size. Larger funds have better means to attract better managers who again attract more investors to the fund. As skill is unobservable, estimating a pooled OLS panel regression will then make room for an omitted variable bias with the same size as the effect of skill on performance times the slope of skill on fund size (Pástor et al., 2015). In other words, if skilled managers manage bigger funds, disadvantages with scaling might be hidden. J. Chen et al. (2004) argue that a fixed-effects model makes for a regression-to-the-mean bias. A fund that experiences a period of lucky performance will experience an increase in fund size. When performance regresses to the mean, a spurious conclusion will be made stating that an increase in fund size is associated with a decrease in fund returns. This is a negative bias which will lead to a more negative relationship between size and performance than it is. A clear disadvantage of using a fixed-effect model is that it excludes variables that might affect it but do not vary over time. For my dataset, the fund's benchmark index will be excluded as it is assumed to be the same through time. The expense ratio will also be excluded due to the same reason. In the following Table 3, I present the summary statistics of all the variables included in my models (Equation 4). By computing pooled regressions and fixed effects models on the panel data, I get six models with three different dependent variables regressed on lagged fund characteristics.

Table 3 - Summary statistics of all variables

Variables	N	Mean	St. Dev.	Min	Max	VIF
FDS	6 194	8.812	0.672	6.700	10.439	1.488
AGE	6 194	1.115	0.300	0.000	1.681	1.364
ER	6 194	0.016	0.004	0.002	0.025	1.102
FAS	6 194	10.089	0.917	0.000	11.564	1.602
IND	6 194	11.709	0.267	11.025	12.124	1.171
CON	6 194	0.082	0.009	0.068	0.107	1.073
MFI	6 194	0.160	0.367	0	1	1.188
SCI	6 194	0.073	0.260	0	1	1.124
MH	6 194	0.019	0.135	0	1	1.004
FLO	6 194	0.010	0.166	-0.966	9.516	1.009

Note: The table presents descriptive statistics for the explanatory and control variables. The table also presents the Variation Inflation Factor.

Group Performance

In order to get a better understanding of the data and to see how funds of various sizes perform in different time periods, funds are divided into three groups for every month they appear in the dataset. Summary statistics for group sizes can be seen in Table 4. Funds can move between groups through time, but at any given month, the active funds at that time are divided in the 0,33 and 0,66 percentiles, which makes for three equal groups

every month. With funds being divided into groups for every month in the period make it possible to compare the performance of the groups. Calculated returns net of cost can be seen in Figure 2. Medium-sized groups seem to have outperformed Small and Large, especially after the financial crisis. The average monthly return is highest for Medium-sized funds, but at the same time, so is the standard deviation of returns. To get a fair picture of the performance, I account for the risk taken by the fund managers. This is done in three ways, first with two commonly used performance-risk measures, then with two-factor models and lastly with a panel data regression.

Table 4 - Summary statistics for group sizes

Group	Min	Max	Mean	Variation	Mean Return	Std deviation
Small	1 251 182	902 833 567	207 929 747	84 %	0.70	5.61%
Medium	256 519 329	3 684 691 000	880 964 019	49 %	0.79%	5.74%
Large	606 643 202	27 531 329 010	4 904 563 335	83 %	0.68%	5.62%

Note: The table shows descriptive statistics in NOK for the funds in the sample.

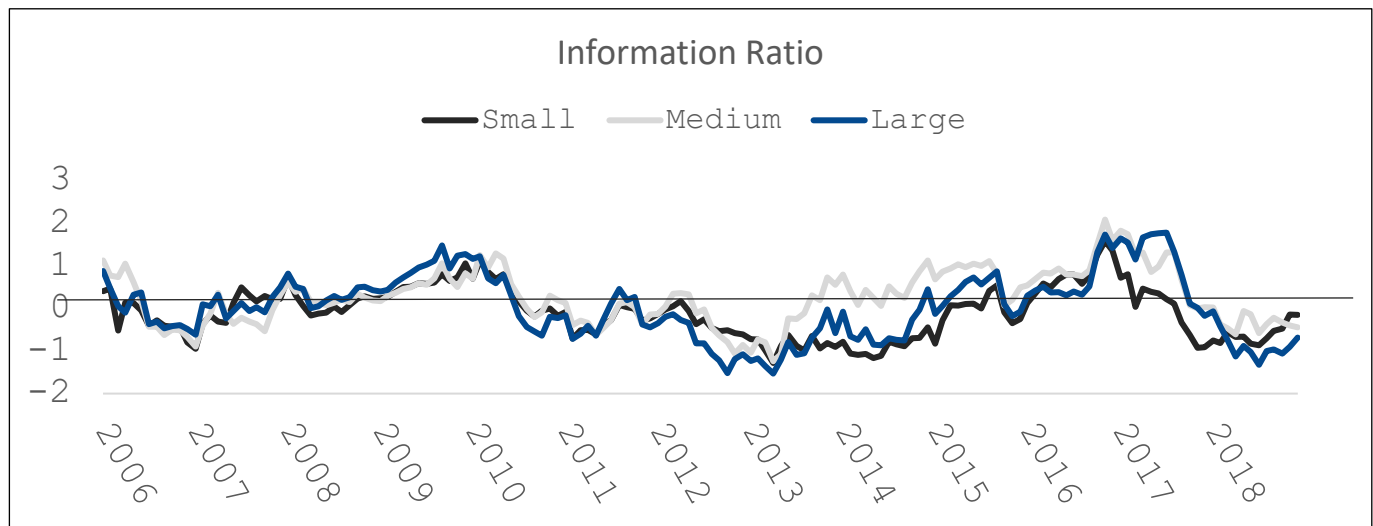


Figure 2- Information Ratio

Information Ratio

The Information Ratio (IR) or appraisal ratio, introduced by Jack Treynor and Fischer Black in 1973 (Treynor & Black, 1973), measures the return in excess of a relevant benchmark index. For the purpose of this study, the IR is calculated with twelve months rolling window and presented in Figure 3. It seems as if Large funds outperformed the other groups in the years following the financial crisis in 2008 up until 2010. Even bigger differences can be seen in the period between 2013 and 2017 where funds in the Medium group did far better than the other groups, with Large being better than Small. By looking at the mean values in Table 5 the pattern from the later years seems to be making the biggest difference as Medium sized funds had an average annualized rolling IR of 0.259 in the whole period while Small and Large had -0.099 and 0.029 respectively. Moreover, studying the histogram and Q-Q Plots in Figure 1 a normal distribution is indicated, which is confirmed when doing a Shapiro-Wilk test for normality (Shapiro & Wilk, 1965). This allows for t-tests to quantify the differences between the groups. Two-Sample t-tests are done between pairs of groups assuming equal variances of IR and

t-statistics shows that the Medium group has done significantly better than both Small and Large groups. There is no significant difference between Small and Large.

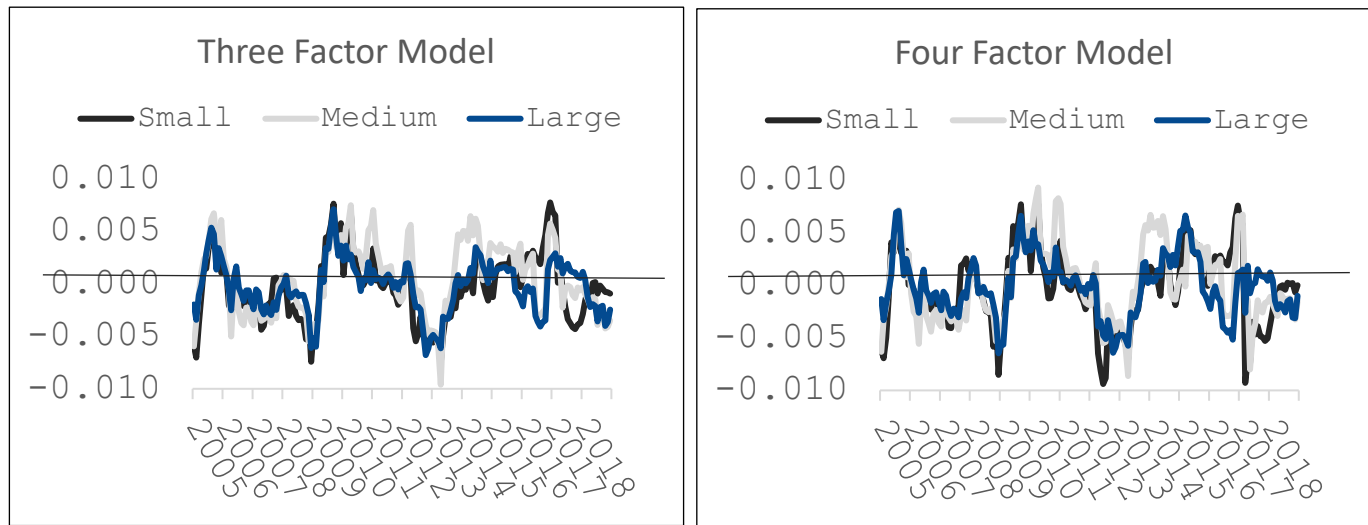


Figure 3 - Factor Models

Table 5 - Information Ratio

Group	Mean IR	Std.dev	t-statistics	
			Diff from Small	Diff from Medium
Small	-0.099	0.59		
Medium	0.259	0.644	5.129	
Large	0.029	0.644	1.645	2.869

Note: The table shows mean values, standard deviation and t-statistics from two-sample t-tests assuming equal variance for Information Ratio calculated as a twelve-month rolling average from 2005 to 2018.

Factor Models

The Fama-French Three Factor Model and the extended Carhart Four Factor Model use market risk, size, book-to-market and momentum factors in order to explain a fund's performance. These models are estimated for all funds in the data and the fund loadings between groups can be seen in Table 2. Using the extended model, I find that Medium sized funds have a higher mean alpha than both Small and Large. It is worth mentioning that only 5 out of 49 of the alphas in the sample had a low enough p-value to discard H_0 of $\alpha = 0$ at a 5 percent significance level wherein adjusted R^2 provides a goodness-of-fit measure of the model. The model explains most of the variation in performance of the bigger funds (0.953) and less for the smaller funds (0.835). As variations over time are of interest, the Factor Models are calculated with rolling twelve months averages for every fund. Group averages are then calculated allowing for funds to change group belongings through time. From the histograms and plots in Figure 1 there seem to be a negative skewness in the Three Factor Model, while the Four Factor Model seems to be closer to a normal distribution. A Shapiro-Wilk test for normality (Shapiro & Wilk, 1965) gives a p-value of 0.2567 and 0.2478 for the Three and Four Factor Model respectively. These are both above the critical value of 0.05, indicating a normal distribution. Further, the plotted alpha values can be seen in Figure 4. Medium sized funds seem to outperform the other groups between 2009-2012 and 2013-2016 in both models. The table in Panel B shows that on average Medium sized funds outperform Small and Large funds in both models. Since the data is normally distributed, t-tests can be carried out to test if the differences are significant. In the Three Factor Model, Medium are significantly different from

both Small and Large. This result is not consistent in the Four Factor Model where t-values are too low. In neither of the models are the Small funds significantly different from the Large funds.

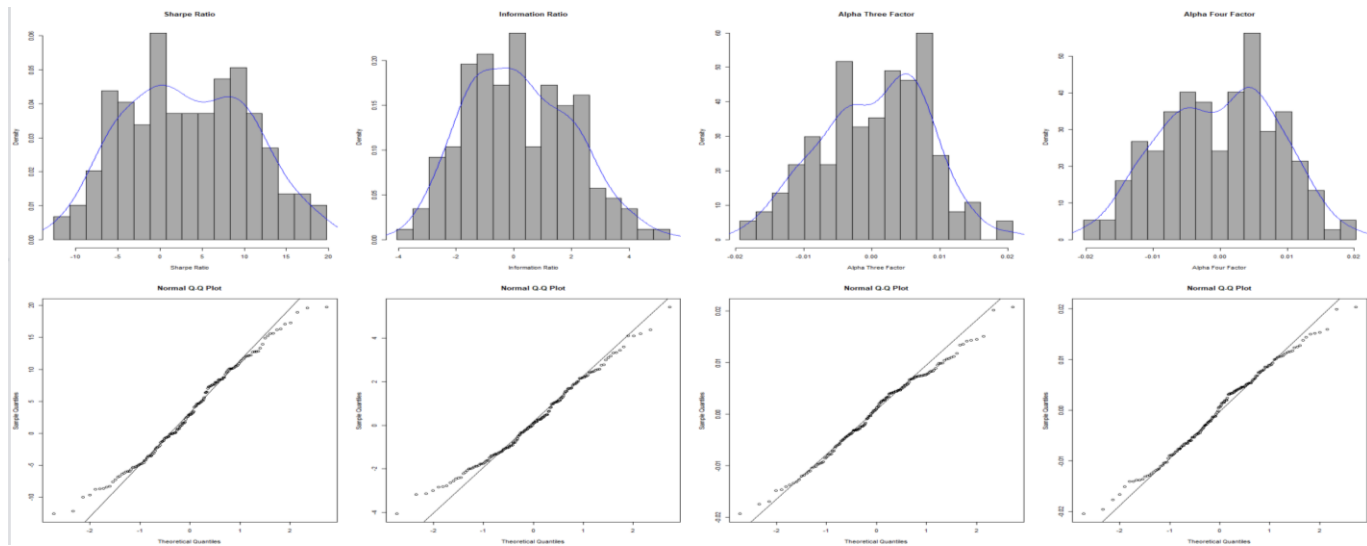


Figure 4 - Histograms and Q-Q-Plots

Table 6 - Factor Models

Panel A: Three Factor Model			t-statistics	
Group	Mean α	Std dev	Diff from Small	Diff from Medium
Small	-0.0003	0.0031		
Medium	0.0008	0.0032	2.93	
Large	-0.0001	0.0023	0.62	2.72
Panel B: Four Factor Model				
Small	-0.0003	0.0035		
Medium	0.0004	0.0035	1.565	
Large	-0.0002	0.0025	0.307	1.508

Note: The table shows mean values, standard deviation and t-statistics from two-sample t-tests assuming equal variance calculated with twelve months rolling windows from 2004 to 2018.

Results and Discussion

I find mixed evidence of performance erosion due to growth in the fund's asset base. I present the estimation results for the panel data regressions in Table 7. The coefficients for fund size are negative for all six models implying that on average, increase in size negatively affects the performance. This finding provides an answer to my first question and is in line with the findings of J. Chen et al. (2004) for US funds. For my pooled OLS models 1, 2 and 3, model 3 is statistically significant (at 0.01) and model 1 and 2 are marginally significant (at 0.1). The statistically significant coefficients are economically small wherein a 10% increase in AUM will reduce expected monthly risk-adjusted return by 5 bps annually for all three models controlled for the other variables in the models. As the pooled OLS is expected to produce biased results and if skill and size are positively correlated, the economic significance of changes in fund size is understated. Better managers attract more money and are probably hired to manage bigger funds. The disadvantages associated with bigger funds might, therefore, be hidden by the better-skilled managers as skill is not observed in this study.

The fixed effects models produce expectedly stronger negative results due to the regression to-the-mean bias, and t-values (between -6.831 and -4.490) make all coefficients statistically significant (at 0.01) for model 4, 5

and 6. With a ten percent increase in funds AUM, monthly performance is expected to decrease annually by 25 bps, 20 bps and 35 bps respectively, controlled for the other variables in the models, which is of some economic significance though still modest. As the two estimation techniques probably give biases in separate directions, the biasfree coefficients can be assumed to be somewhere in between. This is in line with the findings from US funds where size erodes performance (H.-l. Chen & Pennacchi, 2009; Pástor et al., 2015; Yan & Analysis, 2008), but in contrast to the results of Ferreira et al. (2012) who find that the negative relationship does not exist outside the US.

Table 7 - Estimation results for the panel data regressions

Variables	Pooled OLS			Fixed Effects		
	EXCRET3F	EXCRET4F	EXCRETM	EXCRET3F	EXCRET4F	EXCRETM
	1	2	3	4	5	6
FDS	-0.001*	-0.001*	-0.001***	-0.005***	-0.004***	-0.007***
	-1.95	-1.73	-3.205	-5.706	-4.49	-6.831
AGE	0.00004	-0.0003	0.00001	0.006**	0.005*	0.004
	0.053	-0.4	0.006	2.033	1.768	1.325
ER	0.049	0.074	0.01			
	0.995	1.6	0.175			
FAS	0.0002	0.0002	0.0003	-0.0004	-0.0004	0.0003
	0.919	0.816	0.871	-0.841	-0.777	0.547
INS	-0.003***	-0.003***	-0.001	-0.001	-0.002*	0.001
	-3.492	-4.149	-0.832	-1.004	-1.698	0.303
HHI	0.013	-0.013	0.046*	0.015	-0.01	0.032
	0.563	-0.609	1.723	0.617	-0.438	1.15
MFI	0.001	0.001	-0.001			
	0.995	0.96	-0.851			
SCI	0.001	0.0001	-0.001			
	0.569	0.073	-0.852			
MH	0.001	0.001	0.001	0.001	0.001	0.002
	0.929	0.99	0.87	0.823	0.911	0.971
FLO	0.005***	0.005***	0.004***	0.005***	0.004***	0.004**
	4.144	4.003	3.12	3.702	3.641	2.523
Constant	0.037***	0.043***	0.016			
	3.693	4.534	1.391			
Observations	6 194	6 194	6 194	6 194	6 194	6 194
R²	0.007	0.008	0.005	0.011	0.009	0.011
Adjusted R²	0.006	0.006	0.004	0.002	0.001	0.002
F Statistic	4.447***	5.013***	3.181***	9.832***	8.307***	9.732***

Note: The table reports estimation results using two estimators, pooled OLS and Fixed Effects. EXCRET3F is returns in excess of estimated return through a three-factor model. EXCRET4 extends estimation with a momentum factor. EXCRETM is returns in excess of benchmark return. FDS is the logarithm of funds AUM. AGE is the logarithm of funds age. ER is the annual expense ratio. FAS is the logarithm of the AUM of the owning family. INS is the logarithm of the AUM of all funds listed for sale in Norway. HHI is the Herfindahl-Hirschmann index. MFI and SCI are dummy variables taking 1 if the reported benchmark is Mutual Fund TR or Small Cap Index TR. MH is a dummy taking the value 1 if a change is made in managers. FLO is a measure of monthly fund flow, *p<0.1; **p<0.05; ***p<0.01.

A plausible explanation for the low R^2 could be that many factors are expected to affect a fund's performance but are not included in the models as they are hard to observe or irrelevant for the relationship studied in this paper. However, all F-statistic are significant (at 0.01) suggesting that the specified models provide a better fit than an intercept-only model, making it possible to conclude from the coefficients. The most consistently statistically significant variable is Flow (t-values range from 2.523 to 4.144) in all models (at 0.01 for 1 to 5 and at 0.05 for 6). All coefficients are positive, indicating that funds that have experienced a positive cash flow in month t-1 perform better than funds with outflows. This finding reveals that the return on new cash flow is better than the average return for investors which gives support to the "smart money hypothesis" of (H.-I. Chen & Pennacchi, 2009; Gruber, 1996) who argue that investors can predict future performance. Another explanation for the positive relationship is that managers invest new liquid capital in their best ideas that also help alter exposure. The coefficients (range from 0.004 to 0.005) indicate that a 10% increase in fund inflows will result in a 4-5 bps increase in fund performance, holding all other variables constant. This might seem small but keep in mind that funds have experienced an average annual inflow of 22.8 percent in the sample period. Further, the fund flows might affect the relationship between size and performance. A bigger asset base erodes performance but at the same time the inflows provide managers the possibility to change exposure.

J. Chen et al. (2004) find evidence of liquidity issues as the negative relationship of size is strongest for funds investing in small-cap stocks. If the same were true in the Norwegian market, I would expect the Small Cap Index variable to produce negative coefficients. However, the results presented in Table 6 do not provide any evidence to support this since two out of three coefficients are positive and none being statistically significant. Answering the second research question, the fund benchmark does not seem to affect the relationship between size and performance.

Table 8 - Excluding Small funds

Variables	Pooled OLS			Fixed Effects		
	EXCRET3F 1	EXCRET4F 2	EXCRETM 3	EXCRET3F 4	EXCRET4F 5	EXCRETM 6
FDS	-0.001**	-0.001***	-0.004***	-0.004***	-0.003***	-0.010***
	-2.421	-2.807	-5.679	-4.365	-3.404	-7.323
AGE	0.001	-0.0002	0.001	0.002	0.003	-0.003
	0.739	-0.315	1.216	0.506	0.090	-0.691
ER	-0.032	-0.019	-0.085			
	-0.649	-0.422	-1.223			
FAS	0.001	0.001	0.001**	0.002	0.002	0.006***
	1.554	1.611	2.497	1.468	1.213	2.824
INS	-0.004***	-0.004***	-0.0003	-0.004*	-0.004**	0.002
	-4.640	-5.605	-0.217	-1.706	-2.103	0.551
HHI	-0.010	-0.040**	0.058*	-0.003	-0.037*	0.060*
	0.460	-1.973	1.856	-0.122	-1.695	1.814
MFI	0.001	0.001	0.0001			
	0.966	1.071	0.120			
SCI	0.001	0.001	0.002			
	0.909	1.007	1.453			
MH	0.0002	0.0001	0.001	0.00003	0.0001	0.001
	0.109	0.103	0.524	0.019	0.069	0.365
FLO	0.008***	0.006***	0.010***	0.007***	0.006***	0.009**
	3.686	3.110	3.315	3.429	2.949	2.938
Constant	0.053***	0.062***	0.023			



	5.498	6.991	1.713			
Observations	4 200	4 200	4 200	4 200	4 200	4 200
R²	0.013	0.016	0.013	0.015	0.015	0.018
Adjusted R²	0.010	0.013	0.010	0.004	0.005	0.007
F Statistic	5.350***	6.741***	5.421***	8.761***	9.265***	10.662***

Note: *p<0.1; **p<0.05; *p<0.01**

Note: The table reports estimation results using two estimators, pooled OLS and Fixed Effects. EXCRET3F is returns in excess of estimated return through a three-factor model. EXCRET4 extends estimation with a momentum factor. EXCRETM is returns in excess of benchmark return. FDS is the logarithm of funds AUM. AGE is the logarithm of funds age. ER is the annual expense ratio. FAS is the logarithm of the AUM of the owning family. INS is the logarithm of the AUM of all funds listed for sale in Norway. HHI is the Herfindahl-Hirschmann index. MFI and SCI are dummy variables taking 1 if the reported benchmark is Mutual Fund TR or Small Cap Index TR. MH is a dummy taking the value 1 if a change is made in managers. FLO is a measure of monthly fund flow, *p<0.1; **p<0.05; ***p<0.01

Another interesting variable is Industry Size which five out of six models give negative coefficients. However, there are large variations in t-statistic (ranging from -4.149 to 0.303). While Model 1 and 2 are statistically significant at 0.01, Model 5 is significant only at 0.1, and the remaining models are insignificant. Even though hard to conclude, there are some signs that increases in the size of the mutual fund industry erode fund performance, possibly indicating that growth leads to fiercer competition. The size of the industry might affect the relationship between fund size and performance, which partly supports findings of (Pástor et al., 2015).

Table 9 - Excluding Large Funds

Variables	Pooled OLS			Fixed Effects		
	EXCRET3F	EXCRET4F	EXCRETM	EXCRET3F	EXCRET4F	EXCRETM
	1	2	3	4	5	6
FDS	-0.001**	-0.001	-0.001	-0.007***	-0.005***	-0.009***
	-2.102	-1.584	-1.387	-5.431	-4.218	-5.948
AGE	0.0001	-0.0002	-0.0002	0.009**	0.007*	0.009**
	-0.087	-0.181	-0.209	-2.402	-1.948	-2.274
ER	0.114*	0.138**	-0.005			
	-1.698	-2.173	-0.063			
FAS	0.0001	0.0001	0.0001	-0.001	-0.0004	0.00001
	-0.323	-0.305	-0.344	-0.926	-0.837	-0.017
INS	-0.002	-0.002**	-0.001	-0.001	-0.002	-0.001
	-1.522	-2.008	-0.5	-0.59	-0.917	-0.487
HHI	0.034	-0.0003	0.032	0.044	0.008	0.028
	-1.043	-0.011	-0.925	-1.25	-0.237	-0.748
MFI	-0.001	-0.001	-0.00002			
	-0.663	-0.93	-0.024			
SCI	-0.002	-0.003**	-0.001			
	-1.612	-2.178	-0.486			
MH	0.003	0.003	0.002	0.003	0.003	0.003
	-1.423	-1.43	-0.973	-1.345	-1.322	-1.045
FLO	0.005***	0.004***	0.004**	0.004***	0.004***	0.003*
	-3.067	-2.999	-2.434	-2.67	-2.669	-1.818
Constant	0.028**	0.033**	0.013			



	-2.073	-2.572	-0.878			
Observations	4 153	4 153	4 153	4 153	4 153	4 153
R2	0.007	0.007	0.003	0.012	0.009	0.011
Adjusted R2	0.005	0.005	0.001	-0.0003	-0.004	-0.001
F Statistic	2.956***	3.106***	1.305	7.082***	5.131***	6.773***

Note: *p<0.1; **p<0.05; *p<0.01**

Note: The table reports estimation results using two estimators, pooled OLS and Fixed Effects. EXCRET3F is returns in excess of estimated return through a three-factor model. EXCRET4 extends estimation with a momentum factor. EXCRETM is returns in excess of benchmark return. FDS is the logarithm of funds AUM. AGE is the logarithm of funds age. ER is the annual expense ratio. FAS is the logarithm of the AUM of the owning family. INS is the logarithm of the AUM of all funds listed for sale in Norway. HHI is the Herfindahl-Hirschmann index. MFI and SCI are dummy variables taking 1 if the reported benchmark is Mutual Fund TR or Small Cap Index TR. MH is a dummy taking the value 1 if a change is made in managers. FLO is a measure of monthly fund flow, *p<0.1; **p<0.05; ***p<0.01

Performance metrics used to identify differences among group size indicated that medium-sized funds outperformed both small and large funds. This indicates a nonlinearity implying that a regression model for the aggregate data might not be suitable. Consequently, I carried out the panel data regressions on subsamples of the data. To be more specific, the same models are applied twice, first by excluding the smallest funds throughout the whole period, then by excluding the biggest funds. Table 8 presents the results for the first subsample, excluding the smallest funds. Fund Size is now statistically significant at 0.01 for all models except for Model 1, which is significant at the 0.05. Improved significance confirms my assertion that there is decreasing performance to scale for the bigger funds in my sample. Looking closer at the strength of the coefficients, I find that Model 3 and 6 which both has EXCRETM as the dependent variable show stronger economic significance while the other models are unchanged or show weaker effects. Notice also that all R2 values increase by about the double, implying that the models fit better for these funds than they do for the entire sample. If the relationship between size and performance is as concave as analyses of fund performance show, I could expect the coefficients for Fund Size to become positive when excluding the large funds. Table 9 shows that this is not entirely the case. Model 2 and 3 now produce insignificant coefficients. Model 4, 5 and 6 are still negative and statistically significant at 0.01, while Model 1 is negative and statistically significant at 0.05. Moreover, goodness-of-fit measures decrease showing that the models explain less of the changes in the dependent variables than the models including the larger funds. It might still be true that there is a nonlinear relationship, but that the positive relationships among smaller funds are weaker and valid only for the very small funds, being outweighed by the negative relationships among the medium-sized funds. Dividing the funds into smaller groups might have given a clearer picture but it could not be done as that would have made the groups too small.

Plots of historical fund performance (Figure 3) indicate that the relationship between size and performance has changed through time. To account for this, the regression framework is applied to three different periods of 56 months each: from January 2005 to August 2009; from September 2009 to April 2014; and from May 2014 to December 2018. Regression results can be seen in Table 10-12, showing some patterns. Period 1 and 2 seem to produce similar results, with Fund Size coefficients being statistically significant only for models using fund fixed effects (4, 5 and 6). Model fit seems to be rather poor, especially for pooled OLS models where f-statistics are not significant at all in period 2. Specifications seem to be better in period 3 where all f-statistics are statistically significant at either 0.05 or 0.01 level. Fund Size is negative in all models, with t-statistics ranging from 2.519 to 5.786. Model 2 shows a coefficient statistically significant at the 0.05 level and the other models at the 0.01 level. The magnitude of the coefficients is still rather modest, but the relationship has been stronger in the later years, confirming what was found when studying group performance in terms of Information ratio and alpha values (Figure 3 and 4). Some interesting evidence on the role of competition can be found in period

3. All models show negative coefficients for Industry Size, giving hints that a bigger industry makes it harder to produce positive alphas, controlled for other variables. Model 3 and 6 is statistically significant at the 0.01 level, model 1 at the 0.05 level, while the other three models do not find the coefficients significant. More competition in terms of a bigger market erodes performance. At the same time, HHI also shows negative coefficients. Model 3 and 6 shows significant coefficients at the 0.01 level, model 1 and 4 at the 0.05 level and model 2 and 5 show no statistical significance. As higher index values indicate a decrease in competition, a negative coefficient implies that a decrease in competition reduces fund performance. An explanation for this might be that the incentive to perform is lower with lower competition which erodes performance. Answering the second thesis question, the degree of competition might affect the relationship between size and performance in some periods by providing managers a need to perform.

In summation, I find some evidence that a bigger fund will imply poor performance, while a more competitive fund will imply better performance. These results are in line with findings from the US markets. Pástor et al. (2015) find a negative relationship between the size of the active mutual fund industry and fund performance and Feldman, Saxena, and Xu (2020) find evidence that a decrease in the mutual fund industry concentration gives a decrease in net alpha.

Table 10 - Period 1

Variables	Pooled OLS			Fixed Effects		
	EXCRET3F	EXCRET4F	EXCRETM	EXCRET3F	EXCRET4F	EXCRETM
	1	2	3	4	5	6
FDS	-0.001	-0.001	-0.001	-0.014***	-0.010***	-0.011***
	-0.771	-0.707	-0.783	-4.298	-3.362	-3.567
AGE	-0.0002	-0.001	-0.004*	0.042***	0.025**	0.02
	-0.092	-0.527	-1.852	-3.251	-2.02	-1.556
ER	0.237	0.261*	-0.122			
	-1.645	-1.884	-0.88			
FAS	0.001	0.001	0.001	0.008*	0.007	0.003
	-0.741	-0.843	-0.597	-1.698	-1.559	-0.667
INS	0.005	0.004	-0.009	-0.004	-0.004	-0.006
	-0.816	-0.748	-1.564	-0.567	-0.539	-0.88
HHI	-0.019	-0.024	-0.315***	0.242**	0.139	-0.134
	-0.264	-0.347	-4.536	-2.321	-1.383	-1.327
MFI	0.0003	0.0005	0.002			
	-0.21	-0.341	-1.16			
SCI	0.001	0.002	0.0002			
	-0.518	-0.708	-0.088			
MH	0.002	0.002	0.003	0.002	0.001	0.004
	-0.637	-0.521	-0.969	-0.453	-0.256	-1.02
FLO	0.007***	0.007***	0.002	0.005**	0.006***	0.001
	-3.151	-3.206	-1.139	-2.524	-2.666	-0.564
Constant	-0.052	-0.047	0.135**			
	-0.787	-0.729	-2.118			
Observations	1 793	1 793	1 793	1 793	1 793	1 793
R2	0.009	0.01	0.018	0.017	0.013	0.018



Adjusted R2	0.004	0.004	0.013	-0.007	-0.012	-0.007
F Statistic	1.631*	1.808*	3.326***	4.432***	3.193***	4.476***

Note: The table reports estimation results using two estimators, pooled OLS and Fixed Effects. EXCRET3F is returns in excess of estimated return through a three-factor model. EXCRET4 extends estimation with a momentum factor. EXCRETM is returns in excess of benchmark return. FDS is the logarithm of funds AUM. AGE is the logarithm of funds age. ER is the annual expense ratio. FAS is the logarithm of the AUM of the owning family. INS is the logarithm of the AUM of all funds listed for sale in Norway. HHI is the Herfindahl-Hirschmann index. MFI and SCI are dummy variables taking 1 if the reported benchmark is Mutual Fund TR or Small Cap Index TR. MH is a dummy taking the value 1 if a change is made in managers. FLO is a measure of monthly fund flow, *p<0.1; **p<0.05; ***p<0.01

Table 11 - Period 2

Variables	Pooled OLS			Fixed Effects		
	EXCRET3F	EXCRET4F	EXCRETM	EXCRET3F	EXCRET4F	EXCRETM
	1	2	3	4	5	6
FDS	-0.0004	-0.0004	-0.0004	-0.007***	-0.006***	-0.005*
	-0.931	-0.904	-0.774	-3.535	-3.15	-1.921
AGE	0.001	0.0004	0.002*	0.007	0.01	0.012
	-0.797	-0.419	-1.774	-0.989	-1.539	-1.386
ER	-0.051	-0.017	-0.013			
	-0.885	-0.321	-0.176			
FAS	-0.0002	-0.0001	-0.0003	-0.001	-0.001	-0.0003
	-0.725	-0.243	-0.816	-1.29	-1.435	-0.511
INS	0.004	0.005**	-0.003	0.005	0.004	-0.007
	-1.55	-1.993	-0.954	-1.128	-1.029	-1.336
HHI	0.003	-0.072	0.1	0.018	-0.052	0.109
	-0.057	-1.504	-1.487	-0.341	-1.074	-1.619
MFI	-0.001	0.0001	-0.001			
	-0.669	-0.214	-1.49			
SCI	0.00001	0.0004	-0.001			
	-0.01	-0.377	-0.565			
MH	-0.002	-0.002	0.0002	-0.002	-0.002	0.001
	-1.028	-1.063	-0.098	-0.979	-1.019	-0.352
FLO	0.003	0.002	0.005	0.002	0.001	0.003
	-1.112	-0.716	-1.483	-0.813	-0.571	-0.985
Constant	-0.039	-0.043	0.033			
	-1.317	-1.604	-0.884			
Observations	2 252	2 252	2 252	2 252	2 252	2 252
R2	0.004	0.004	0.005	0.01	0.01	0.005
Adjusted R2	-0.001	-0.001	0.001	-0.013	-0.013	-0.018
F Statistic	0.788	0.857	1.19	3.042***	3.161***	1.541

Note: *p<0.1; **p<0.05; ***p<0.01

Note: The table reports estimation results using two estimators, pooled OLS and Fixed Effects. EXCRET3F is returns in excess of estimated return through a three-factor model. EXCRET4 extends estimation with a momentum factor. EXCRETM is returns in excess of benchmark return. FDS is the logarithm of funds AUM. AGE is the logarithm of funds age. ER is the annual expense ratio. FAS is the logarithm of the AUM of the owning family. INS is the logarithm of the AUM of all funds listed for sale in Norway. HHI is the Herfindahl-Hirschmann index. MFI and SCI are dummy variables taking 1 if the reported benchmark is Mutual Fund TR or

Small Cap Index TR. MH is a dummy taking the value 1 if a change is made in managers. FLO is a measure of monthly fund flow, *p<0.1; **p<0.05; ***p<0.01

Table 12 - Period 3

Variables	Pooled OLS			Fixed Effects		
	EXCRET3F	EXCRET4F	EXCRETM	EXCRET3F	EXCRET4F	EXCRETM
	1	2	3	4	5	6
FDS	-0.001***	-0.001**	-0.002***	-0.008***	-0.005***	-0.014***
	-2.669	-2.519	-3.013	-4.412	-2.975	-5.786
AGE	-0.0001	0.00005	0.0001	0.011**	0.013**	0.021***
	-0.149	-0.052	-0.052	-1.98	-2.474	-2.822
ER	0.042	0.071	0.059			
	-0.65	-1.206	-0.67			
FAS	0.001	0.0002	0.001*	0.004	0.002	0.002
	-1.458	-0.463	-1.843	-0.89	-0.568	-0.322
INS	-0.011**	-0.002	-0.050***	-0.01	-0.007	-0.045***
	-2.067	-0.51	-6.95	-1.26	-0.897	-4.179
HHI	-0.176**	-0.105	-0.533***	-0.157**	-0.089	-0.468***
	-2.498	-1.626	-5.522	-2.179	-1.334	-4.814
MFI	-0.001	-0.001	-0.001			
	-1.012	-0.742	-0.775			
SCI	-0.002	-0.001	-0.001			
	-1.118	-0.521	-0.722			
MH	0.005**	0.005***	0.001	0.005**	0.006***	0.003
	-2.272	-2.776	-0.303	-2.434	-2.983	-0.85
FLO	0.001	-0.0001	0.005	-0.001	-0.001	0.001
	-0.32	-0.035	-1.526	-0.378	-0.513	-0.449
Constant	0.153**	0.047	0.660***			
	-2.281	-0.769	-7.178			
Observations	2 149	2 149	2 149	2 149	2 149	2 149
R2	0.011	0.009	0.032	0.016	0.01	0.045
Adjusted R2	0.006	0.005	0.028	-0.008	-0.013	0.022
F Statistic	2.290**	2.028**	7.109***	4.824***	3.094***	14.112***

Note: *p<0.1; **p<0.05; ***p<0.01

Note: The table reports estimation results using two estimators, pooled OLS and Fixed Effects. EXCRET3F is returns in excess of estimated return through a three-factor model. EXCRET4F extends estimation with a momentum factor. EXCRETM is returns in excess of benchmark return. FDS is the logarithm of funds AUM. AGE is the logarithm of funds age. ER is the annual expense ratio. FAS is the logarithm of the AUM of the owning family. INS is the logarithm of the AUM of all funds listed for sale in Norway. HHI is the Herfindahl-Hirschmann index. MFI and SCI are dummy variables taking 1 if the reported benchmark is Mutual Fund TR or Small Cap Index TR. MH is a dummy taking the value 1 if a change is made in managers. FLO is a measure of monthly fund flow, *p<0.1; **p<0.05; ***p<0.01

Robustness and Diagnostics

A series of diagnostic tests are run to test the robustness of the analysis. The Variation Inflation Factor is calculated to test how much of the variance of the estimated regression coefficients is inflated due to covariance with other variables. Results can be seen in Table 4. All values lie in the interval 1 - 1.6, implying moderate

collinearity which should not impose a significant problem for the estimates in the panel data models. A Breusch-Pagan test is conducted, showing no signs of heteroskedasticity. Control variables are included in the model to account for the possibility that they might correlate with fund size as well as affecting fund performance. Lastly, the models are applied on different subsamples of the data and on different time periods. This produce differences in the estimators, indicating that the results are not perfectly consistent through time.

Conclusions and Policy Implications

Using panel data technique, this paper empirically analyzes the relationship between performance and size of Norwegian mutual funds and contributes with an increased understanding of several drivers of the performance. I find mixed evidence, mainly indicating that there is a negative relationship between lagged fund size and performance. The negative relationship seems to be nonlinear as bigger funds suffer more from increases than medium and smaller sized funds. Some evidence also points towards a positive relationship for the smallest funds, indicating that funds might be too small to justify an active strategy. This compliment earlier studies in the US as it finds that relationships found in the US are also valid for smaller Norwegian market with lesser participants. However, I suggest further studies to see if it is universal or if Norway is a special case of small markets.

I use several adjustments for risk to answer the first question “Does the size of a fund’s asset base affect risk adjusted performance among Norwegian mutual funds investing in Norwegian equities? Firstly, dividing funds into three groups for size reveals significant differences when analyzing information ratio and estimated alpha from multi-factor models. Both small and large funds underperform against the medium-sized funds, implying that size does affect the performance. This finding is not consistent as no significant differences are found using the Sharpe ratio.

Secondly, a panel data model is proposed to control for other variables assumingly affecting the risk-adjusted performance. Two estimators are considered, each expected to produce biases in opposite directions. Presenting both gives a more nuanced answer to the second research question. Six regression models provide mixed evidence that growth in the size of a fund’s asset base erodes performance. All models produce negative coefficients although of varying significance. Overall, economic significance seems to be small but present.

The suspicion of nonlinearity is strengthened after applying the regression models to subsamples of the data. Regressions done after excluding the smallest funds show more significant coefficients, implying that the negative relationship is more robust for relatively bigger funds. Applying the models on three different periods, show that the relationship between size and performance has changed through time, with the last five years showing better fit to the data and higher significance of coefficients. Including control variables also provide answers to the second research question: “Are there any factors affecting the relationship between size and performance?” A positive correlation between fund inflow and performance is found for all panel data models. This relationship indicates that return on new cash flow is better than the average return, either showing that investors to some extent predict future performance or that liquid funds are valuable for the managers as they can make alterations in exposure.

Further, I find mixed evidence in the whole sample of a negative correlation between the size of the mutual fund industry and fund performance. More money competing for good deals give a more efficient market, making it harder for managers to outperform their passive benchmarks. I also find significant negative relations between competition density (HHI) and fund performance in the latest period, indicating that a more competitive industry improves performance. No evidence of liquidity issues is found as no coefficients concerning fund strategy (small-cap funds) are statistically significant. Furthermore, I do not find evidence of reasons for the negative relationship between size and performance, but existing literature shows that liquidity

and price movement play important roles in the US market (J. Chen et al., 2004). The smallest funds seem to be too small to justify the cost of an active strategy, while the biggest funds overinvest in information and suffer higher transaction costs (Indro et al., 1999). As bigger blocks of trades must be done, managers move prices and take longer time to complete changes in exposure, which negatively hurts performance. Further studies will have to be done to investigate if the same reasons apply to the Norwegian market.

With the money management industry constantly evolving, companies take new approaches to attract customers. One of the biggest participants in the Norwegian market, DNB, recently changed their fee structure by reducing the fixed fee and introducing a performance fee (DNB, 2019). The fund's performance now plays a bigger role for their profits than before, and size becomes more of an issue. Previously, a bigger fund would have produced higher income, but now this is only true if the magnitude of size outweighs the loss of performance. If performance-based rewards are a trend being followed by other companies, findings in this paper implicate that we might start to see managers putting limits to the size of their funds. If performance became the direct source for income, managers would have to carefully consider factors affecting that performance, fund size being one of them. Companies might open several funds and hire more people in the search for new investments, which proves to mediate the relationship between size and performance (J. Chen et al., 2004). Also, having strategies such as keeping cash reserves and investing in more liquid assets to cope with liquidity issues might become a bigger focus for managers. Funds introducing performance-based fee structures align the interest of the managers and investors, although the risk structure is still asymmetric. A stronger incentive to produce positive alphas might make for better performance, but it might also make for alterations in risk. Especially if the basis for the success fee is reset every year, an underperforming fund might take undesirable risk at the end of the year in a last attempt to end up on the positive side, with the downside being mostly on the investor side. Regulators should make sure success fees are applied with a watermark solution where the principal investment sets the basis for the success fee and further reduce agency costs. Allowing for more funds to enter the market might also be good for the investor as a lower density of competition is good for performance.

Understanding the effects of scale on fund performance is of importance to investors both to pick the best funds and knowing when to invest or withdraw. By being aware of how economies of scale may affect their agency relationship to managers, investors can choose compensation contracts (fee structures) that will best serve them. Independent intermediaries should analyze how funds are exposed to liquidity risk and problems concerning scale to provide investors with the knowledge needed to make informative decisions. I control for various variables that might co-vary with fund size and performance, but potentially important factors are excluded due to lack of data or observability. These factors could affect the relationship and should be explored further. It might be that performance benchmarks are inadequate proxies for fund strategy or that cash holdings could make up for some of the disadvantages that extreme variations of size may bring. Nevertheless, investors should pay close attention to the size of the fund's asset base and how fund managers are planning to cope with price and liquidity issues.

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Store Atmosphere, SERVQUAL and Consumer Loyalty: Case Study of Excelso Coffee Shop

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Abstract

Purpose- With competitors, making business people must continue to evaluate the marketing strategy carried out and understand consumer behavior, especially from the coffee shop. The study aims to present the relationship between Store Atmosphere, SERVQUAL, and Consumer Loyalty in Excelso (Big Mall, Samarinda City).

Design/Methodology- We conduct online surveys (instrumental social networking sites). The sample of this study was based on purposive sampling. There were total 98 participants. The study hypotheses were assessed with the OLS model.

Findings- We find that there is a significant positive effect of the Store Atmosphere variable on SERVQUAL and SERVQUAL on Consumer Loyalty. Meanwhile, the relationship between Store Atmosphere and SERVQUAL variables is positive-insignificant.

Practical Implications- With this study, it can create a sense of curiosity to conduct further research, namely by holding interviews or distributing a broader questionnaire to obtain maximum results.

Introduction

As the current development and lifestyle changes, the trend of the coffee shop business is prevalent, and the opportunities are enormous in Indonesia. In the city of Samarinda itself, there have been many coffee shops with various concepts and various classes for consumers. It is starting from the middle class down to the middle class and above. This has led the business world to very tight competition to win many consumers. Because in addition to attracting consumers, for the survival of the company, the company itself must be able to retain its customers.

This very tight business competition will spur companies to innovate increasingly aggressively. To attract consumers' interests, entrepreneurs need to understand the behavior of their consumers, one of them from the store atmosphere. With so many competitors in the business world, coffee makes businesses do shop development, create a better store atmosphere, and has its characteristics from other coffee shops. The store atmosphere is the differentiator of the coffee shop from one another. That in itself is very influential in getting and attracting consumers. Also, service quality is very influential in the development of a business. Companies must create the best and maximum service that can be interesting to create customer loyalty. Consumer loyalty is formed when there has been a purchase process that has an impact on the formation of the impression of quality and experience in using goods or services (Basith, 2014).

To improve and retain customers is to pay attention to the atmosphere that is owned. At present, the atmosphere is the most critical factor for customers in choosing a place to eat (Grace, Tandiono, & Remiasa, 2018). The store atmosphere is divided into six elements, i.e., lighting, music, temperature, aroma, spatial planning, and building design. Store atmosphere can affect the enjoyment of people spending time at the café or restaurant. Customer loyalty is something that is always expected by every business person. Loyalty is aimed at behavior, for routine purchases, and is based on a decision-making unit (Griffin, 2005; Levy, Weitz, & Grewal, 2001).

Service quality is the dominant factor influencing organizational success. Success can be achieved by providing high-quality services (Siddiqi, 2011). The organization, in this case, the company must focus and pay special attention to the quality of service. This is because customers not only want high-quality products, but they also want high-quality products and services. Organizational success in providing services can occur when the services provided meet customer expectations (Jaber Hossain & Islam, 2012; Puni, Okoe, & Damnyag, 2014).

Service quality (SERVQUAL) rests on five dimensions (physical evidence, reliability, responsiveness, assurance, and empathy) so that everything can be well integrated to create excellent service to consumers (Parasuraman, Zeithaml, & Berry, 1988).

In general, coffee shop business growth in the city of Samarinda City has increased quite rapidly. Excelso coffee is one of them already present, not only Excelso, but many famous coffee shops are also present in Samarinda City (such as Starbucks and J. Co). Excelso has two outlets located in Plaza Mulia and Big Mall. As one of the coffee shops that is developing quite rapidly, Excelso is certainly also experiencing competition in the world of the coffee business. The amount of competition, making Excelso has a different store atmosphere and has its characteristics as a differentiator with another coffee shop. Besides, the quality of services provided is as good and as optimal as possible. So, it becomes more reason for consumers to choose coffee shop to be visited.

With competitors in the same place or around, making business people continue to evaluate marketing strategies and understand consumer behavior. One way to deal with competition is to make something different in meeting the needs, consumers' desire for the place, a comfortable atmosphere, and the best quality of service. That way, it can provide satisfaction and maintain customer loyalty to continue to choose and visit Excelso.

The form of service in Excelso Coffee Shop (Big Mal) in Samarinda City has so far been considered unsatisfactory by the consumer because the store atmosphere is less conducive, such as the treatment of employees who are not yet capable, the service time is not entirely optimal, and other factors cause customer inconvenience. Keep in mind that good stores are those that are able to satisfy consumers because that is the form of feedback. This is caused by a large amount of competition that offers store atmosphere and quality of service so that it has a direct or indirect effect on consumer loyalty. Therefore, based on the phenomena that occur, it is exciting for us to discuss the extent of the relationship between the three variables (store atmosphere, SERVQUAL, and consumer loyalty).

Literature Review

Store Atmosphere and SERVQUAL

Store atmosphere can be a more reason for consumers to be interested and choose where they will visit and buy. In addition to making differentiation from other cafes, the creation of an adequate store atmosphere can provide its satisfaction to consumers (Asmoro Kanthi, Suharyono, & Kumadji, 2016). So far, parietal needs to realize the importance of store atmosphere to create a shopping experience, which in turn gives consumers satisfaction. Consumers will not recommend restaurants to other friends if they do not find an enchanting atmosphere according to their own (Dhurup, Mafini, & Malan, 2013; Yalçın & Kocamaz, 2003).

Most retailers have discovered the benefits of developing an atmosphere that complements other aspects of store design and merchandise. Retailers can also create more exciting shopping experiences through store atmosphere. This aims to support the creation of an attractive atmosphere so that it attracts consumer interest through SERVQUAL (Levy, Weitz, & Grewal, 2019).

Another benefit obtained by retailers in creating store atmosphere is that consumers get a feeling of pleasure and comfort in the environment, thus making them relaxed. This resulted in them wanting to spend a long time in the place with an equivalent SERVQUAL (Gilbert, 1999).

Hypothesis 1 (H-1): Store Atmosphere has a significant positive effect on SERVQUAL.

Store Atmosphere and Consumer Loyalty

The atmosphere refers to the physical characteristics of the shop that are used to develop images and to attract customers, which means the atmosphere of the cafe is the physical characteristics that are used to build impressions, loyalties, and attract customers. The atmosphere in environmental design through visual communication, lighting, color, music, and aroma to stimulate the perception and emotional responses of customers and ultimately influence their buying behavior. This means that the atmosphere of the cafe through these indicators can create a comfortable purchasing environment so that it can influence consumers' perceptions and emotions to make purchases (Berman & Evans, 1992; Effendy, 2019; Levy et al., 2001).

Items such as attractive employees, adequate number of employees, and well-presented employees are used as a measure for employee factors. Based on that, in terms of storing atmospheric variables (such as facilities provided), the focus will be on internal design and decoration only. On the other hand, the atmosphere will include background music, the smell in the dining room, lighting, and temperature can also affect customer satisfaction. Spatial elements will look into the way furniture and equipment are arranged in the dining area space, because employee factors will focus on things that can be controlled, such as employee uniforms and the sufficient number of employees (Heung & Gu, 2012; Jalil, Fikry, & Zainuddin, 2016).

Hypothesis 2 (H-2): Store Atmosphere has a significant positive effect on Consumer Loyalty.

SERVQUAL and Consumer Loyalty

Customer loyalty has an essential role for companies to achieve competitiveness and profit. Customer loyalty can increase wages and reduce company costs (Bodet, 2008; Lin & Wang, 2006). Customers are satisfied when they have positive feelings about the service or product in question. Such positive feelings come from meeting or exceeding their desires, demands, and expectations. That way, the feeling is based on the gap between expectations and their perceptions after using the product and receiving service. This gap will influence a person's purchasing decisions (Akbar & Parvez, 2009; Hashem & Ali, 2019; van der Wiele, Boselie, & Hesselink, 2002).

SERVQUAL will have an impact on the development of the concept of customer loyalty - SERVQUAL because it is considered as one of the determinants of customer loyalty that is often analyzed. The SERVQUAL constituents (directly and indirectly) are essential in evaluating the customer's view of the customer's trust in an organization. Service is defined as a quality that is important for customer satisfaction, and SERVQUAL has an impact on customer loyalty. It can be interpreted that the limitation of the study of SERVQUAL is the inconsistency in determining the relationship between SERVQUAL and customer loyalty. Several previous studies have discussed SERVQUAL in determining customer satisfaction and influencing customer loyalty. Other studies, by contrast, have justified the effect of customer satisfaction on SERVQUAL quality (Bolton & Drew, 1991; Doney & Cannon, 1997; Garbarino & Johnson, 1999; Ivanauskiene & Volungenaite, 2014; Oliver, 1999; Rust & Oliver, 1993).

Hypothesis 3 (H-3): SERVQUAL has a significant positive effect on Consumer Loyalty.

Scale and Measurement

The study uses two types of variables, i.e., dependent and independent. Store Atmosphere acts as an independent variable (hypothesis-1 and hypothesis-2). Whereas SERVQUAL is an independent variable (for hypothesis-3), and SERVQUAL also acts as a dependent variable (hypothesis-1). For Consumer Loyalty has a role as a dependent variable on hypothesis-3. All variables have influence and interrelationship with one another. To answer these three hypotheses, we use the Ordinary Least Square (OLS) analysis tool. The measurements are made in table 1 to facilitate the definition of these variables.

Table 1 - Dimensions and explanations of variables

Variable (Codes)	Definition	Indicators	Previous Study	Likert
Store Atmosphere (SA)	Creation of an atmosphere in the store environment to provide comfort and pleasure to consumers while in the store	Cleanliness of Excelso outlets is always awake, The music played by Excelso makes it comfortable and not noisy in the ears, The fragrance used by Excelso creates a sense of comfort and does not interfere with the appetite to eat, Room temperature is always awake and makes it comfortable to be in the booth Excelso, and The selection of lighting carried out by Excelso is right and sufficient	(Hussain & Ali, 2015)	1-5
SERVQUAL (SQ)	It is essential for producers or companies in meeting the needs and expectations of consumers	Excelso waiters use neat and polite clothes, Excelso employees provide services that meet customer expectations, Excelso	(Tjiptono, 2014)	1-5

		employees provide quick response and service to customers, Employees at Excelso Coffee prioritize greetings, greetings, and smiles when serving customers, and Employees at Excelso coffee helps provide advice on choosing coffee and serving it to customers when confused choosing a menu		
Consumer Loyalty (CL)	A commitment that is formed from consumer loyalty to a product or service so that it continually makes purchases and chooses Excelso coffee	Repurchase products or services that have become his choice, Not easily influenced or interested in other products (refuse), Make recommendations on a product or service to others and Buy outside the product or service line (reward)	(Keloay, Rumawas, & Asaloei, 2019)	1-5

Noted: Scale 1-5 (Strongly disagree, Disagree, Neutral, Agree, Strongly agree)

The subjects in this study were Excelso Coffee (Big Mall) consumers in Samarinda City during 2019. We drew samples with a purposive sampling technique. Samples are customers who have shopped (at least twice a month) at Excelso Coffee Big Mall, have been aged 17 years and over, and are domiciled in Samarinda City.

The study population cannot be determined, so determining the minimum number of samples that the number of samples as respondents must correspond to the number of question indicators used in the questionnaire (Hair, Ringle, & Sarstedt, 2013). The objects used in this study were 98 participants. Data from interviews and questionnaires were processed using the Statistical Package for the Social Sciences (SPSS) version 24.

The survey was conducted online through an instrument social networking site (questionnaire), with Google Docs and a link, sent to users to fill out instruments. That way, participants and other people from social media are also asked to post a link from their profile.

Results

The number of consumers selected as respondents was 98 participants with criteria based on gender, age, and occupation. The respondents are consumers who have loyalty to Excelso Big Mall in Samarinda City.

It is known that the number of respondents was 98 participants (44 men and 54 women). Of these, 15 participants aged 17-21 years, 36 participants aged 22-26 years, 19 of them were 27-31 years old, and the most dominant were aged over 32 years as many as 28 people. Based on the type of work, the majority of participants are students, and at least (8 participants) work as government employees.

The mean value (average) of each Store Atmosphere indicator has an average of more than 3. This shows that the Excelso Big Mall store atmosphere is pleasant. The indicator of cleanliness in Excelso both has an average rating of 4.12 (the highest), and the lowest is an indicator of good lighting following the tastes of the average consumer of 3.58. With a total average for all indicators found at 3.77. It can be concluded for the Store Atmosphere variable in Excelso Big Mall, participants have rated it well.

For the mean value on the SERVQUAL indicator, it also has an average of more than 3. It appears that SERVQUAL is good. Tangibles, as the most significant indicator, offered by Excelso such as using neat and polite clothes, reached an average of 4.08. Meanwhile, the lowest indicator was Responsiveness, namely in

providing fast response and service to customers by 3.56. Thus, the majority of participants gave a rating of 3.73 for the SERVQUAL variable (good).

The mean magnitude of each indicator of Consumer Loyalty (average above 3). The Consumer Loyalty variable in Excelso Big Mall looks good. The highest indicator is to repurchase the product or service that has become his choice by always buying Excelso coffee products with an average achievement of 3.78. Meanwhile, the Indicator of buying outside the product or service line, the average participant assessed 3.44. With a total average for all indicators of 3.65 or in other words, participants have rated it well.

Table 2 - Validity and reliability analysis

Variables	Indicators	r value	r table	Alpha	Decision
SA	1	.684	.196	.749	Supported
	2	.536			Supported
	3	.545			Supported
	4	.547			Supported
	5	.644			Supported
SQ	1	.539	.196	.846	Supported
	2	.489			Supported
	3	.458			Supported
	4	.470			Supported
	5	.490			Supported
CL	1	.568	.196	.797	Supported
	2	.621			Supported
	3	.612			Supported
	4	.720			Supported

Source: Author(s) calculation

All indicators used to measure the variables used to have a correlation coefficient that is greater than the r table is $n = 96$ or 0.196. Thus, the indicators of Store Atmosphere, SERVQUAL, and Consumer Loyalty are valid. The test results of the Cronbach Alpha value of all variables are greater than 0.60, or in other words, have met the criteria (see Table 4).

They are based on Table 3, explaining that the two correlations with different levels of significance are quite varied. When compared to the three variables, the highest 5% significance correlation is the Store Atmosphere variable (indicator 2), and the lowest is indicator 5 (SERVQUAL). From a significance level of 1%, indicator 4 of the SERVQUAL variable has the highest correlation value compared to indicator 1 in the Store Atmosphere variable.

Table 3 - Correlation matrix

Variables	Indicators	Pearson Cor.	Prob.	N
SA	1	.488**	.000	98
	2	.728*		
	3	.716**		
	4	.717*		
	5	.716**		
SQ	1	.649*	.000	98
	2	.518**		
	3	.700*		
	4	.792**		
	5	.625*		
CL	1	.788**		

2	.737*	.000	98
3	.735**		
4	.640*		

Source: Author(s) calculation

**Correlation is significant at the 0.01, *Correlation is significant at the 0.05

Hypotheses 1, 2, and 3 have been answered with a positive relationship between these variables. Even so, the highest coefficient is SERVQUAL and Consumer Loyalty, and the lowest in the Store Atmosphere relationship to Consumer Loyalty. Table 6 also presents the constants obtained by 6.126 (positive) with determination (R^2) of 85.6%. This means that of the three relationships, it has a strong coefficient, and the rest is outside the study model (14.4%).

Table 4 - Summary of influences between variables

	Relationship	Coeff.	t value	Prob.	Decision
H-1	SA --> SERVQUAL	.292	2.891	.005	Supported
H-2	SA --> CL	.159	1.438	.154	Not supported
H-3	SERVQUAL --> CL	.447	2.557	.023	Supported

Constanta (α) = 6.126

$R^2 = .856$

F value = 8.959

DW = 2.106

Source: Author(s) calculation

The F value above of the statistic provisions ($8.959 > 2.36$), which is interpreted by the relationship of SERVQUAL, Consumer Loyalty, and Store Atmosphere, simultaneously has a significant effect. Durbin Watson's value is still considered reasonable, or the model used does not occur autocorrelation disorders ($n < 4.00$). It can be concluded, only the rejected hypotheses explain the Store Atmosphere and Consumer Loyalty, while the two hypotheses proposed have been accepted (as summarized by Figure 1).

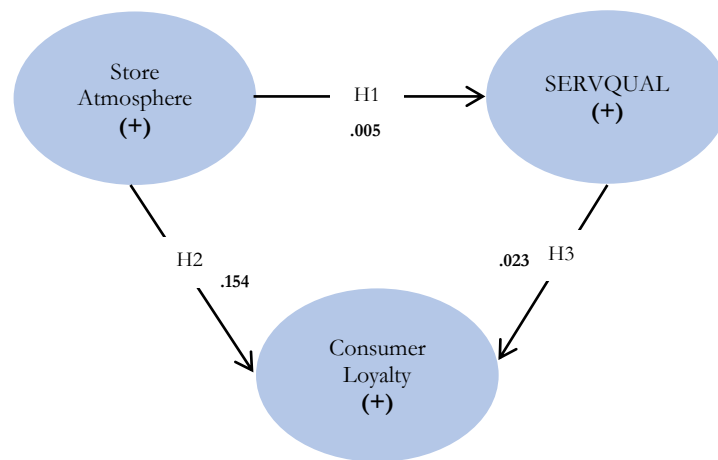


Figure 1 - Study model

Discussion

The results of the Store Atmosphere on SERVQUAL show there is a positive and significant effect, so the first hypothesis is accepted. If the Store Atmosphere increases, the SERVQUAL will increase. Store atmosphere can not only provide a pleasant purchasing environment but also can provide added value to the products sold and also as a means of communication that can have positive and beneficial effects made as attractive as possible

(Nofiaty & Yuliandi, 2014). Also, by increasing impressive offerings, it can add value to the SERVQUAL presented by Excelso in Big Mall (Samarinda City). In terms of quantity and quality, it can be the principal capital in the future, because the conclusion of this study is positive and significant.

Increasing employee involvement and fostering employee motivation is very necessary so that the willingness to try to improve their abilities by creating competent service continuously. That way, the reliability of service can be felt directly by consumers (Pusriadi & Darma, 2020).

Store Atmosphere on Consumer Loyalty is proven by a positive effect, but not significant, so the second hypothesis put forward is rejected. If the Store Atmosphere increases, then Consumer Loyalty will increase, even if only in quantity. However, in the scope of the study observation period, the quality is less systematic impact, because the acquisition is not significant. Store Atmosphere not only creates an atmosphere of a place to provide comfort and pleasure to consumers while there but how to increase sales and generate loyalty to consumers (Listiono, 2015). So far, Store Atmosphere is one of the characteristics of Excelso in Big Mall (Samarinda City), which is a differentiator from other coffee shops that can be the primary strategy to attract consumers.

Using experience is part of consumer loyalty, where the factor is everything that happens at each stage in the consumer cycle from before the purchase occurs, until after the purchase occurs and may include interactions (Wijayanti, Setini, & Darma).

Our study also confirms that the influence of SERVQUAL and Consumer Loyalty is positive and significant. This fact indicates if the third hypothesis proposed has been accepted. If the SERVQUAL value increases, it will increase Consumer Loyalty. Service quality is one of the main factors of company success, where service quality is an effort made by the company to consumers through meeting the needs, desires of customers, and the accuracy of its delivery in balancing or exceeding expectations desired by customers (Wungow, 2013). In terms of quantity and quality, this analysis shows that during the study observations, we found excellent results, and they can continue in the future.

Consumer loyalty is always changing, and this is an essential part of companies because consumer spending increases motivation for educational change, encourages social, cultural change, and other factors that cause changes in behavior (Maria, Permadi Hakim, & Caisar Darma, 2020).

Conclusion

Referring to the calculation of data and study observations, we can conclude that only two hypotheses can be accepted, namely the effect of Store Atmosphere on SERVQUAL and SERVQUAL on Consumer Loyalty. Meanwhile, Store Atmosphere and SERVQUAL show a positive and insignificant relationship, so the hypothesis is rejected.

Excelso in Big Mall (Samarinda City), needs to maintain and maintain cleanliness, music, the smell of outlets, room temperature, and proper lighting to maintain consumer loyalty. Also, improvements are needed for services, ranging from employee attitudes to providing responses and services as expected by consumers.

In the future, it is hoped to be able to use this study as a comparison material to carry out subsequent research and use other variables with different models or scale of analysis to obtain varied results, to provide attractiveness and refinement.

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Conflicts between Students Living on-Campus Dormitories: The Case of Dormitories at Eastern Mediterranean University Campus

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Abstract

Purpose- In the current century, the number of students who travel abroad to study at international higher education institutions universally has increased. Accordingly, a considerable number of young generations from different countries are coming together, and most of them prefer to live at the university's dormitories. The main aim of this research has identified and examined the impacts of roommate conflicts, on the lifestyle and academic success of students living in dormitories.

Design/Methodology- The study area of this research is the dormitories located inside the Campus of Eastern Mediterranean University in Famagusta, Northern Cyprus. Data was collected by utilizing both qualitative and quantitative methods.

Findings- The results showed that conflicts amidst roommates negatively influenced their lifestyle and academic success. Although it is impossible to solve problems and conflicts at all, however, it is possible to minimize and control them. Moreover, management styles and approaches play a fundamental role in reducing or increasing negative impacts.

Practical Implications- Several suggestions mentioned for managers to minimize problems, like price reduction, qualified staff employment, evaluation of dormitories, rewriting the rules against alcohol consumption and making noise, and etc.

Introduction

As the need to acquire a higher education has augmented worldwide, more and more students travel abroad to study. Leaving home, parents, family, and friends traveling and settling in an entirely new environment is not as easy as it seems. It brings many challenges to a student's life. Clash/conflict presently continues as a factor in educational life. Campuses of international Universities are considered the center of tensions since people from different countries with diverse cultural backgrounds are coming together (Fleetwood, 1987).

Most students, especially in their first year, choose to stay in dormitories (on-campus residence halls). Dormitories are essential in terms of psychological bonding and sharing physical space (Cloven & Roloff, 1991; James, Nadarajah, Haive, & Stead, 2012). The life quality in dormitories can affect the psychosocial aspect and academic success of the students (Kim, Kwak, Yang, Lim, & Zhang, 2019). The first relationship, especially for freshmen students, is the roommate relationship. Unfortunately, cultural and personality diversifications are the leading cause of conflicts among roommates (Lee, 2008). Accordingly, living harmoniously, socially, and culturally with others became quite difficult among university students. This dilemma is widely known across the globe as some academic scholars considered roommate conflicts in their studies (Erb, Renshaw, Short, & Pollard, 2014; Halpin, 2009; McCorkle & Mason, 2009). In this regard, Halpin (2009) in his research mentioned that, future researchers should conduct their studies in universities with more cultural diversification and collect more data to fill the existing gap regarding this topic.

Given that, this research aims to identify the cultural and personality clashes among the students living in dormitories to explore some frequent conflicts that students face every day, to examine their impacts on students' lifestyle and academic success, and finally to investigate what kind of strategies are followed or suggested by the managers of dormitories to resolve such issues.

The case study of this research are dormitories of Eastern Mediterranean University in Famagusta city in the Turkish Republic of Northern Cyprus, where there are more than 15000 students from 106 countries, who came from diverse backgrounds for the sake of proper education. As a matter of fact, due to the continuous growth in the number of students, which results in raising the number of dormitories, consequently, increase the conflicts among students.

Research Objectives

- To obtain the mentioned aim, the objectives of the study are to:
- Identify what the common and frequent clashes faced by the students are
- Determine what are the impacts of those clashes on students' lifestyle, habits, behaviors, achievements and academic accomplishments
- Figure out specific strategies and approaches to settle some solutions for such a clash
- Propose some recommendations to make these contentious matters less effectual

Literature Review

The term clash has been used in various aspects, and it has appeared in different forms, types, and places around the world. The form of clashes can be defined by considering the different variables such as gender, racial, religious, ethnic, and political. Besides, types of clashes can be categorized in different categories, such as clash within individuals, between individuals, within and between groups. However, clashes can take place in various places, including home, organizations, university campuses, residential settlements, and on battlefields (Erb et al., 2014; Hartwick & Barki, 2002). However, researches have concurred that this term is synonymous with a

group or individual disagreements, disputes, physical conflict, quarrels, and confrontations (Salleh & Adulpakdee, 2012).

One of the main challenges faced by the students who travel to another place is to find a suitable residence and adapt to the new environment. Most students, especially in their freshmen year, choose to stay in on-campus dormitories. Globally, in most universities, students share a room with other students. The most important and intriguing part of any fresh student in the university is to find out the room partner and to catch out on the unknown future roommate. Although, this anonym person might be the first-year friend for the freshman or a new friend for a returning student from the vacation to the dorms. But, the general thoughts of each one is that not every roommate experience is going to be perfect. Previous studies showed that the choice of residence could influence the lifestyle and academic success of students. For instance, Duran and Zakahi (1988) mentioned that a weak relationship between roommates is one of the most compelling issues for dissatisfaction with the university; thus, it results in a lower GPA. According to Nasrazadani, Maghsoudi, and Mahrabi (2017), multiple social factors can be considered as an emotional challenge that can cause stress and anxiety among dormitory students, such as new social relationships, fear of the future, and separation from the family, which could also cause extreme troubles for them such as a tendency toward drug abuse. The process of leaving homes and adjusting in a new environment and culture is often viewed by many prospective students as anxiety-producing and a cause of homesickness (McCorkle & Mason, 2009). A study done by Brooks and DuBois (1995) found that adjustment to a new environment was dependent on the individuals' personality, background characteristics, and other environmental factors.

Apart from the personality and environmental factors, according to Draguns and Tanaka-Matsumi (2003) and Tseng (2001), anxiety and psychological distress can also be caused by cultural values, beliefs, and behaviors, yet, affect the lifestyle and academic success of the students. But personality factors influence the level of distress and anxiety that are mostly caused in the stage of adapting to a new environment (Tognoli, 2003).

Indeed, it is not just about cultural or personality conflicts. However, residents in dormitories feel that their freedom of action is tied and limited because they don't know how to deal with these differences between each other in a crowded place. It was determined by a study of Schroeder and Jackson (1987) that some widespread and noticeable contradicts among students are repeatedly being the source of the disturbance. Such contradicts the preferred sleeping time, study conditions, bedtimes, and cleanliness. Different preferences for sleeping and study habits can be readily explained by roommates' abilities to concentrate or relax with different amounts of background noise-music, talking, TV, etc. Some students are easily able to tune out distractions (screeners) while others cannot (non-screeners) since they are having their large-space boundary. Hence, this type might seem overly controlling and unfriendly; in this case, they prefer to pay a high cost just to achieve their privacy.

Similarly, the difference in bedtime and getting up between roommates is also a prevalent struggle. Besides, different levels of students' cleanliness became an apparent one in confined places. Thus, neat students prefer neat roommates, whereas messy students prefer messy roommates.

Adamu (2014) indicated the cause of clash in dorms, which was mainly the religious songs played with mobile devices. Indeed, students with a high ethnocentric nature considered other as inferior and worthless, thus rejecting others' culture, religion, and ethnic groups. Zikargae (2013) expressed that roommates with clashes and dissatisfied with their room partners will be less successful than others; high capability students make better results.

Besides, residential density also plays a pivotal role in elevating the psychological symptoms among students, such as mild depression, anxiety, and social withdrawal (Tao, Wu, & Wang, 2016). Although the number of roommates will depend upon the university but will range anywhere from one to three and sometimes even

more, especially in what is called low budget-hostels or residence halls. The most common standard is for two students to share one room and one bathroom. However, rooms usually have standard, basic, understandable, and adequate furniture, including beds, desks, closets, storage compartments (drawers) for personal items. Because residence halls are a closed area with a high density of occupancy, it is effortless to observe what kind of issues are happening among students. Conflicts in residence halls raise unique challenges as students confront the widely diverse individual and cultural styles (McCorkle & Mason, 2009).

Besides, the capacity and ability of students to create a good relationship with their roommates and others influence their success and satisfaction with the university (Hawken, Duran, & Kelly, 1991). Without a satisfying relationship with a roommate, students may experience aloneness and may try to alleviate that aloneness by leaving university (Azevedo, Howell, Mora, Thomas, & Tovar, 2018; Hawken et al., 1991).

Moreover, aloneness's stress also accompanies as a significant contributor to some symptoms, including fatigue, depression, and alcohol use till addiction, anxiety, and suicidal feelings (Azevedo et al., 2018; McCorkle & Mason, 2009).

Some other obstacles that students face hurdle their lifestyle and academic success; no doubt, sleeping difficulties and contradictions with faculty staff are also correlated to stress, which is resulted from unstable roommate relationships (Dusselier, Dunn, Wang, Shelley iI, & Whalen, 2005). Some severe cases where conflicts reach the maximum level among roommates might cause mental health, suicidal ideations, and hopelessness (Erb et al., 2014). Astonishingly, some studies found that stress is not only evident in students who are having roommate conflicts, but also, students who are comfortable with their roommates are also highly experiencing this struggle due to frequent disquiet about maintaining good relations with faculty members, new friends from diverse cultures and the new environment as a whole (Jordyn & Byrd, 2003).

Generally, the clash could have different positive and negative aspects (Kıralp, Dinciyürek, & Beidoğlu, 2009). Kıralp et al. (2009) mentioned the positive aspects such as it helps to self-knowledge, gain experience in solving problems with motivation, recognizing and understanding others in a better way, learn to solve small challenges before they convert into big problems.

Furthermore, Campbell, Bridges, and Nystrand (1997) argued that clash is a normal part of regular life if it causes negative aspects such as stress, nonconformity, social anarchy, severity, and ruin between groups. Furthermore, it is supposed and believed that students can acquire academic benefits from living on campus (de Araujo & Murray, 2010).

Methodology

This research has adopted both qualitative and quantitative methods to collect data towards achieving the primary purpose of the study. The quantitative research method mainly requires quantifying and analyzing the variables to get results by utilizing statistical techniques. In short, this method demonstrates an issue or a phenomenon numerically and analyzes it with the help of mathematical methods in particular statistics. Similarly, it has been identified by (Creswell et al., 2003) that quantitative methods are fulfilled by anticipating well-designed surveys and experiments to obtain the data from the selected population (Apuke, 2017).

With the help of statistical data, the qualitative method will contribute to a deep understanding of a problem in given research from the perspective of students and managers and how students experience the specific predicament. The non-numerical research methodology was used as a means to seek social-cultural specific information, which usually linked with contradicting behavior, opinions, actions, and emotions of respondents to fully understand the picture from all angles to find the adequate solutions (Mack, 2005).

Data was collected and analyzed throughout three steps.

- A questionnaire survey to find out how widespread the problem is.
- Interview with students to find out the intensity of the impacts.
- Interview with dormitory managers to find out their strategies to sort out the problems?

Sampling and Procedure

The sampling method used in this research is based on the concept of random sampling and purposive that are the most common sampling techniques. The random sampling requires a large number of participants, while the purposive sampling demands the respondents to be selected based on their relevance to the research topic. The sample size in the qualitative method may or may not be fixed before data collection, depending on the study objectives, available resources, and time. In short, once the researcher is theoretically saturated, new data are no longer adding new insights and answers to the research questions, it is an indication that the sample size is adequate.

The sample for the quantitative method was the students who are living in on-campus dormitories. In the first step, nine dormitories among the existing 23 dormitories inside Eastern Mediterranean University (EMU) campus were selected. These dormitories were divided into three categories, include 'low-cost dormitories,' 'middle-cost dormitories,' and 'luxury dormitories.' Accordingly, three dormitories were selected from each category randomly to distribute the questionnaires. The survey was written in English and then translated into the Turkish language. Questionnaires were distributed in both the Turkish and English languages—back translation method used to avoid any mistake and misunderstanding (McGorry, 2000). We conducted a pilot study with a sample of 15 students to ensure that there is not any difficulty in understanding the study measurements. The self-administered survey questionnaire was designed into four sections: (1) demographic information; (2) Type of Roommates Conflicts (20 questions that Table 1, section A represents the measurements related to the roommate conflicts); (3) Roommates Conflict's Impacts on Lifestyle (13 questions that it is shown in Table 1, section B; (4) Roommates Conflict's Impacts on Academic Success (6 questions that are presented in Table 1, section C. All questions of sections 2, 3, and 4 were closed questions. In this way, 400 questionnaires were distributed among students who are living in the selected dormitories to obtaining feedback from them. In this respect, 232 (58%) completed questionnaires were used in the final evaluation while rests were rejected due to inadequate answers. The process of collecting data took place in March, April, and May during the spring semester of 2018-2019. The Statistical Package for the Social Sciences (SPSS) software was used to do statistical analysis for the quantitative part of the research.

Table 1: Measurements

A: Roommate conflicts	B: Roommate conflicts' impacts on students' lifestyle
1. Bedtime Conflict	1. Stress
2. Room Cleanliness Conflict	2. Sleep Difficulties
3. Noise Conflict	3. Aggressiveness
4. Loud Music Conflict	4. Leave the Dormitory
5. Different Personalities Conflict	5. Depression
6. Staying Out till Late at Night Conflict	6. Loneliness
7. Lack of Privacy Conflict	7. Unhealthy Eating
8. Un-use of Headsets/Headphones Conflict	8. Internet Addiction
9. Inviting Friends Conflict	9. Hopelessness
10. Lack of Personal Hygiene Conflict	10. Tetchiness

11. Use of Personal Stuff without Permission Conflict
12. Loss of Private Space Conflict
13. Eating Habits Conflict
14. Different Cultures Conflict
15. Alcohol Consumption Conflict
16. Different Dressing Style Conflict
17. Religious Practices Conflict
18. Different Nationalities Conflict
19. Use of Drugs Conflict
20. Different Religions Conflict

11. Drugs Addiction
12. Alcohol Consumption/Addiction
13. Suicidal Thoughts
- C: Roommate conflicts' impacts on students' academic success***
 1. Late Submission
 2. Being Late for Classes
 3. Low Grades
 4. Failure in Exams
 5. An argument with Faculty Members/Miscommunication
 6. The argument with Class Fellows

Demographic Characteristics

The gender ratio was 132 female and 98 male, and the rest were not clarified. Moreover, the majority of respondents' religious were Muslim (155), Christian (26), and not clarified (52). In terms of education level, undergraduate students were 192, 26 master students, and 6 Ph.D. students. The age range of responders was between 17 to 30 years.

Semi-Structured Interviews

As a second step of collecting the data, comprehensive 'open-ended' questions for in-depth interviews were conducted by interviewing with nine students, 3 of them were male, and six were female.

Finally, semi-structured interviews were conducted with three managers of the selected dormitories, where each interview lasted for almost 45 minutes. All interviews were recorded; besides, taking notes was an essential part of this stage. Semi-structured questions are given below:

1. Demographic information (age, nationality)
2. For how long have you been working as a manager in dormitories?
3. How many dormitories have you worked in?
4. Do you get students' complaints about their roommates frequently?
5. What were the chief complaints?
6. What were your strategies to solve the problems?
7. Have you ever refused any student due to his/her lousy behavior inside dormitories?
8. Have any students left the dormitory due to the conflicts with the roommates?

Results and Discussion

Figure 1 represents the results of questions related to the roommate conflicts by percentage, measurements coded by numbers from 1 to 20 in order (see table 1, column A).

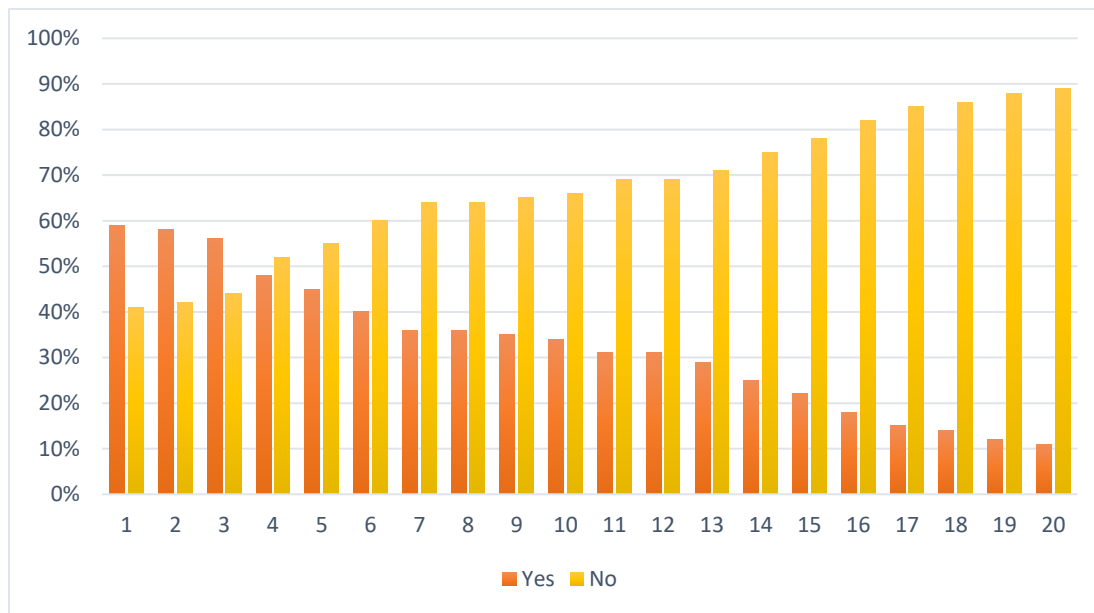


Figure 1: Percentages of Yes/No responses to Roommate Conflicts

Percentages indicated the existence of some frequent clashes that influenced the students' way of life and their academic success. Indeed, as shown in Figure 1, bedtime, room cleanliness, and noise conflicts were the most important ones, at 59%, 58%, and 56%, respectively. The fact behind having a high frequency for noise conflicts at the mentioned percentage might be due to two reasons which are the un-use of headsets while listening to music in a high volume (48%) and/or the normal noise caused by the roommate while watching television during bedtime, talking on the phone in a loud voice, banging the doors and dragging furniture, as experienced by the researchers themselves. Referring to students' interviews, respondent 1 mentioned that the source of the noise was not putting the phone on the silent mode at night and switching on/off the lights particularly. She also added that she is experiencing an extreme noise conflict with her roommate because sometimes she keeps working the whole night on her models while listening to loud music without earphones as she is an architecture student. Students' sleep difficulties and roommate conflicts resulted in stress (Dusselier et al., 2005). Nonetheless, as said by respondent 3:

"I am suffering from insomnia; hence, unable to sleep at night due to the noise created by my room and dorm mates. I feel headache and nausea constantly and thus was unable to give presentations/ submit assignments in the class".

Not only that, but also participant 4 stated that *"One of my roommates used to keep the television on while I was still asleep, which caused me to sleep difficulties and stress consequently."*

Another reason for having noise conflicts is the noise created by those roommates who come back to the room very late at night (40%), as shown in Figure 1. As pointed out by participant 4:

"My first roommate was a party girl, so she used to come back to the room very late at night, drunk, and used to wake me up and disturb my sleep."

So, because of having different bedtimes, she had frequent arguments with her roommate, which resulted in having stress and depression (Dusselier et al., 2005).

Overall all interviewees mentioned almost the same reasons behind having the noise conflicts.

To emphasize, participant 2 also commented on bedtime conflict by saying that if he is sleeping at a particular time, his roommate keeps on doing his regular stuff that again generates more noise-causing discomfort, which then results in arguments and fights.

Figure 2 illustrates the results of questions related to the roommate on lifestyle by percentages, measurements coded by numbers from 1 to 13 in order (see table 1 column B).

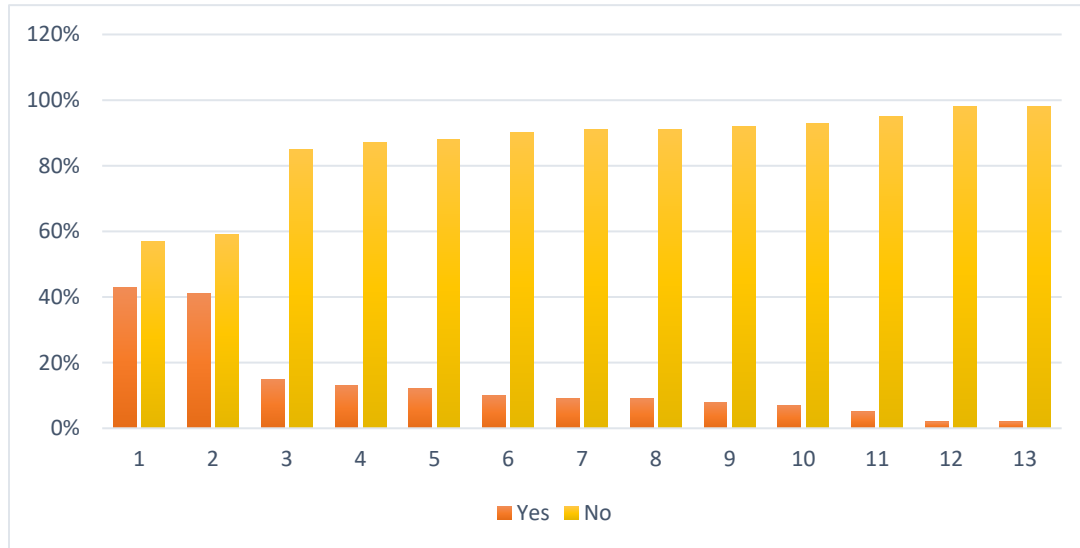


Figure 2: Roommates Conflicts' Impacts on Lifestyle

Figure 3 represents the results of the questions related to the roommate conflicts' impact of academic success by percentage, measurements coded by numbers from 1 to 6 in order of table 1 C's elements.

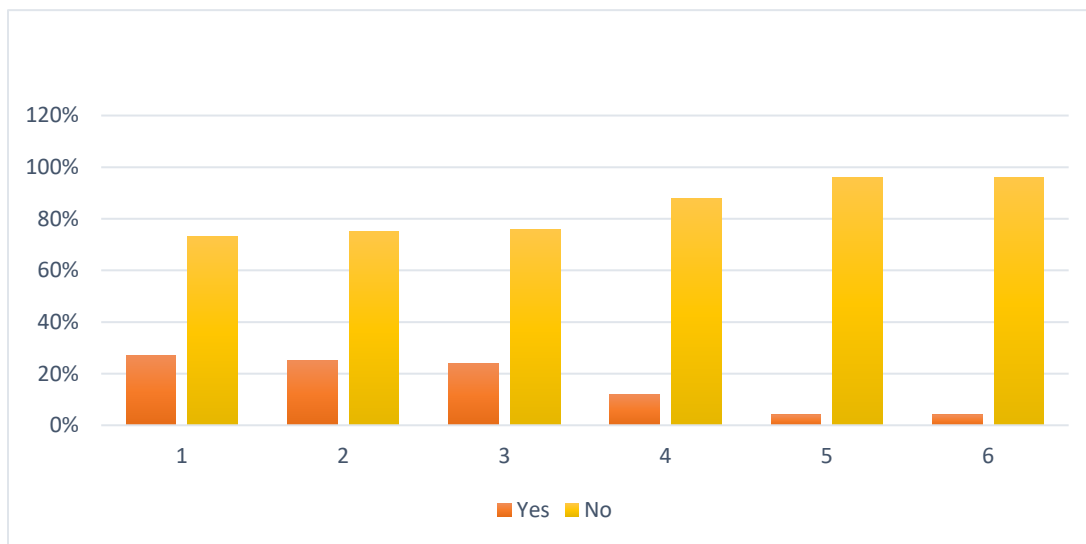


Figure 3: Roommates Conflict's Impacts on Academic Success

Figure 2 shows evidence of the conflicts' impact by having the aggressiveness at 15%. Accordingly, students sometimes response in different ways to overcome the stress and depression caused by these conflicts by consuming alcohol (2%), drugs (5%), using internet excessively (9%) and mostly leave the dormitory (13%) which most likely will cause the feeling of loneliness (10%) and hopelessness (8%) and that can also be the

reason for the existence of at least 2% of suicidal thoughts. A case in point, in one of the on-campus dormitories, a murder case was reported in 2015 due to a roommate conflict.

Similarly, participant 6 seemed quite upset and depressed while talking about the conflicts he has faced with his roommates. He mentioned he is 'unfortunate' to stay in x-dormitory and referred to his dormitory as a prison saying:

"I'm living in prison. I've no life of my own. I'm unable to get enough sleep because my roommates do not respect if I'm sleeping, and they create a lot of noise. Sometimes they watch movies in high volume without earphones. They invite their friends as well in the room for overnight stays. This selfish attitude of my roommates is affecting my life very badly. I'm unable to go to my classes on time, or I've to attend classes without having any sleep at all".

He further explained the consequences of having conflicts and arguments regularly by saying that he has become more aggressive over time and might turn into a 'psychopath' since he is unable to go and study in his room. "I live in my department," said the participant. Self-confessing about having suicidal thoughts,

"I was thinking about it, and it has been one year since I am suffering."

Another conflict with high frequency was room cleanliness (McCorkle & Mason, 2009). As it was expected that this conflict takes place amidst most of the roommates due to different cultures (Lee, 2008), but, surprisingly, this conflict was witnessed more among roommates of the same culture and nationalities. Instead, having different personalities (45%) played a pivotal role in having most of the conflicts, as illustrated in Figure 1. Participant 5 went through severe stress and anxiety saying:

"My roommate never participated in room cleanliness; she used to walk around the room in her dirty shoes, and besides, keeping her sticky socks on the sofa."

Again interview participant 1, suffered from having frequent arguments regarding the room cleanliness with her roommate, stating:

"My roommate keeps dirty dishes in the sink for days and messes up the kitchen counter every time she prepares her food; she even leaves the small bits of food all over the floor. Also, whenever she is working on her models, the room is turned into garbage by leaving pieces of paper and cardboard everywhere. It annoys me and stresses me out".

Indeed, as confirmed by a manager of one of the dormitories, who has been working in this position for almost 17 years, that room cleanliness is the most common complaint that they receive from the students especially, from the girl's side.

Referring to the data collected, 133 respondents confirmed to have frequent arguments with their roommates at 57%. The most common reason for having these repeated arguments is because of using personal stuff without asking for permission (31%). As stated by participants 2, 4, 7, and 8, they had arguments with roommates due to this conflict. All of these participants said:

"My roommate eats all my food and uses my stuff like clothes, toiletry, and stationary without asking for my permission. I had arguments almost every day due to this conflict."

Participant 7 said:

"I suffered from stress, depression, and hopelessness because my roommate used all my cosmetics without even asking me. She used my clothes and jewelry as well. Despite telling and arguing with her several times that I'm not comfortable with this, she kept on doing it again and again."

Among many conflicts, another worth mentioning is the conflict due to alcohol consumption (Rawls, Johnson, & Bartels, 2004). However, alcohol inside the campus and specifically in dormitories forbidden, 22% of the respondents reported having this conflict with their roommates. Participant 5 explained this conflict in detail by saying:

“My x-roommate was an alcoholic one; she has no control over herself while she is drunk. She used to behave weirdly, like opening and closing the drawers, banging the doors at night, and eating snacks while creating a lot of noise. I was unable to sleep most nights. I felt more aggressive and sometimes felt like punching her face”.

All of the interviewees confirmed that they became highly addicted to the internet to avoid communicating and having any arguments with their roommates. By referring to our data, participant 4 said:

“Just to avoid my roommate, I try to use the internet more.”

Unfortunately, these impacts were not only limited to their lifestyle but, surprisingly, it profoundly influenced their academic success (Hawken et al., 1991), like being late for classes and not being able to submit projects and/or assignments on time, which, in turn, affects their grades. As observed in Figures 2 and 3, the impacts of these conflicts on students’ lifestyles are stress and sleep difficulties at 43% and 41%, respectively. At the same time, their academic success is late submissions, being late for classes and low grades at 27%, 25%, and 24% orderly.

Apart from having clashes with roommates, some of the participants mentioned that they faced difficulties due to poor and inefficient dormitory management. As specified by participant 8:

“I don’t have any conflicts with my roommates, but I faced sleep difficulties due to lack of privacy and unprofessional attitude of the dormitory staff. They enter the room whenever they want without even knocking the door. I noticed that some of my things had gone missing. They sometimes come to the room at 6 AM, for such general maintenance or inspection while we are sleeping”.

He further added:

“There is no privacy while showering, one bathroom is shared by two rooms of 3 students in each, and there is no lock on the door. It is very annoying”.

As claimed by most of the participants and respondents that most of these impacts could be minimized if owners of dormitories hire professional staff, e.g., security personnel needs to be more alert, managers should be friendlier towards students, respect their need, listen to them and help them out in every possible way. As evidence of the unprofessional attitude, biased and racist behavior of the management, and lack of trust of students on management, only 91 students out of 232 complained to their dormitory managers about having conflicts with their roommates. However, 41 of them didn’t get any help.

As witnessed by participant 8, security staff in his dormitory was seen sleeping instead of doing his duty. He said:

“Drunk guys come inside the dorms, and they pass out on the stairs and corridors, and security personnel doesn’t care at all. Management needs to be a bit strict towards this problem”.

By analyzing the data, we figured out that the dormitory with the least impacts due to roommate conflicts had more professional staff. Going back to the records, the manager of this dormitory is an experienced female who knows how to deal with young people as she is a mother herself. While answering the question, “What do you do to minimize the impacts of roommate conflicts?” She stated:

“I deal with the students as my children, not as customers. We aim to give students a homely environment as they are far from their families. If we considered just money, everything would be destroyed”.

Manager 2 said, “We try our best to solve the problems by changing the roommates. We give verbal and written warnings to the offenders. If the bad behavior continues, we send them to the disciplinary committee and sometimes kick them out of the dorm as the last option”.

Although all the mentioned conflicts amidst roommates cannot be sorted out, as there are more than 20,000 students in EMU and most of them prefer to reside in dormitories in their freshmen year, they come from different backgrounds, different nationalities and possess different personalities. Still, their impacts can be minimized by taking appropriate measures.

Conclusion and Recommendations

To summarize, students bring a cornucopia of experiences and predispositions to their first college roommate experience (McCorkle & Mason, 2009). Our results showed that the majority of students deal with conflicts with their roommates every day. The most common ones were different bedtimes, room cleanliness, and noise (McCorkle & Mason, 2009). It was confirmed that these conflicts have an impact on their lifestyle and academic success in several ways. These clashes aggravated stress and aggression among students. Although it is impossible to solve these issues, however, they can be controlled and minimized. Dormitory management plays a pivotal role in reducing the impacts and consequences of such conflicts.

Specifically, the University’s self-dormitories (not privately owned) represent the image of the university. Therefore they should act efficiently and set an example for other dormitories by implementing some strict rules and regulations.

Nevertheless, by analyzing the results, it can be concluded that the main flaws of invested dormitories were; Alcohol and drug consumption, racism and discrimination, lack of rules and regulations, mismanagement, and finally, lack of proper maintenance in dormitories. Possible solutions might be taken into account to settle down the shortcomings above are:

- We are reducing the room prices, especially the single room, and making them affordable for students.
- Hire professional staff for dormitories.
- Put the dormitory evaluation on the students’ portal.
- Orientation sessions for the new arrivals.
- Set penalties for the offenders.
- Rules and regulations for noise; ‘lights out and strict actions against drunk.’
- Consider age groups and maturity levels of students while putting them in the same room.
- Appoint student counselors in dormitories.

Future Study

Future research may include more conflicts and impacts such as smoking, using the air conditioner, and inappropriate sexual behavior. It may also investigate more deeply if different demographic attributes play any role in the tendency of having roommate conflicts like; age, gender, nationality, religion, and culture.

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A System Dynamics Model Of Exchange Rate Determination And Forecasting

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Abstract

Objective: The objective of this paper is to develop a model of exchange rate determination and forecasting to provide reasonable forecasts for the exchange rate to facilitate long-term investments.

Design: The study develops the model using the system dynamics method. Grounded on the fundamental theories, the model incorporates nonlinear feedback relationships of interest rate, inflation, per capita income, terms of trade, and oil prices with the exchange rate.

Findings: The simulation results indicate the robustness of the model to mimic not only the long term past behavior of the exchange rate but also its ability to provide a reliable long-term forecast for the exchange rate. The model is portable and applies to any oil-exporting country after calibration.

Policy Implications: The study has practical implications for individuals, businesses, and the Government because they are all influenced by the exchange rate movements. Specifically, this model provides a useful tool for long term strategic financial planning of oil firms.

Originality: The study develops a model for exchange rate accounting for nonlinear feedback relationships among the variables.

Introduction

The exchange rate is one of the significant factors that may influence and is influenced by the economy of the country. It is one of the essential elements reflecting a country's economic health. The exchange rate movements influence the trade performance of many firms in any specific country and its balance of payments. The exchange rate is defined as the price of one currency in terms of another currency, determined by the demand and supply mechanism in the market. This demand and supply mechanism is a consequence of multiple factors of the economy. Specification of those factors that determine the exchange rate is still a challenge despite the vast amount of work done to explain the exchange rate volatility. This is evidenced by the presence of enormous theoretical models, and various modeling approaches (Meese & Rogoff, 1983) used to determine the exchange rate behavior. The monetary model of the exchange rate has been an essential part of exchange rate determination models, which relies on the fundamental variables of the economy to explain the exchange rate movements (Cerra & Saxena, 2010). Much empirical evidence is emerging due to advances in econometrics for testing the relationship between the exchange rate and the fundamental variables as predicted by the theoretical models. In the international finance literature, imperative theories, namely Purchasing Power Parity (PPP), International Fisher Effect (IFE), and Interest Rate Parity (IRP) are most widely used. These theories define international parity conditions that determine the exchange rate between two currencies. The PPP assumes that the price of an identical basket of goods in two countries is constant when measured in terms of common currency. Whereas IFE and IRP consider interest rate as a source of change between the currencies' exchange rates. Such use of international parity conditions to determine the exchange rate is labeled as the fundamental method that is expected to provide long-term trends rather than short-term predictions (J. Madura & Fox, 2011). It is because the exchange rate might deviate from its equilibrium level defined by PPP in the short run, but it is expected to revert to its mean in the long run (Dąbrowski, Papież, & Śmiech, 2014). Other methods of exchange rate determination are technical and market-based. These methods are linear.

Moreover, the empirical evidence is inconclusive (Öge Güney & Hasanov, 2014; Park & Park, 2013). It is ironic to note that these methods not only ignore the feedback processes but also do not utilize the fundamental causal structure put forward by the fundamental method. This might be one possible reason for the poor empirical performance of these models. This study is an endeavor to fill the gap by modeling the exchange rate through these fundamental theories using feedback loops and nonlinear relationships. The objective of this paper is to develop a system dynamics model of the exchange rate that embodies the structure that explains the relationship between exchange rate and the fundamental variables, enabling the replication of the past behavior and leading to reliable forecasts to facilitate the long term investment and financing decisions. First, the model is simulated to calibrate the historical exchange rate between Norwegian Kroner and the US dollar. Once the model can capture the long-term trends of exchange rate movements, the model is simulated to provide forecasts for the future and test various scenarios designed to assess the impact of changes in variables on the exchange rate.

The model developed in this study would provide forecasts for exchange rate movements from long term foreign investment and financing perspective for multinational companies generally and specifically for oil companies as it includes the impact of oil price fluctuations for an oil-exporting country. Since the Bretton Woods system ended in 1971, most of the countries followed the floating exchange rate policy, and exchange rate volatility has become inevitable (Kilicarslan, 2018). Exchange rate volatility is the change in the price of one currency in terms of another currency. Volatility is the movement of the price of currency around the balance value of exchange rate or short-term fluctuations from the long-term equilibrium trends of an exchange rate that leads to appreciation or depreciation of the currency (Oaikhenan & Aigheyisi, 2015). Appreciation or depreciation of the currency does significantly impact the profitability of foreign exchange transactions, relative prices of the country, foreign investment flows, including both direct and portfolio and stable economic growth

(Ajao, 2015; Martins, 2015). Changes in macroeconomic factors increase the uncertainty causing volatility in the exchange rate market. This uncertainty causes delays in investment decisions, negatively influencing economic growth through influencing investor confidence, capital, and trade flows (Oaikhenan & Aigheyisi, 2015). Thus, forecasting exchange rate movements is significant for making decisions regarding trade and capital flows, investments, and the economy. Exchange rate considerations are essential not only for trade volumes of a country but also for long term investments, the former appears on the current account balance whereas, the later on the capital account. Multinational companies undertake most of the foreign direct investment of the world, and the exchange rate plays an important role not only when the investments are made but also when payoff from these investments needs to be converted back to the local currency (Crowley & Lee, 2003).

In this article, the simple model of the exchange rate is developed, which accounts for the fundamental factors that play their role in exchange rate determination through demand and supply of currency. The study focuses on the structures generating the exchange rate trend between Norwegian kroner (NOK) and US dollar (USD) by using the system dynamics approach, based on interrelationship among inflation, interest rate, per capita income, terms of trade, oil prices, and exchange rate. The model operationalizes the PPP and IRP theories of the exchange rate to determine the exchange rate to provide empirical evidence if these fundamental models of exchange rate explain the exchange rate behavior. The model focuses on the Norwegian economy. Norway has allowed a free-floating exchange rate since 1992. Norway is an economy rich in natural resources, including petroleum, gas, hydropower, fish, and minerals. Thus, the exports of the country include these natural resources, mainly petroleum, gas, seafood, and shipping, with trade surplus historically in the trade balance. Oil and gas exports are almost half of the total exports of Norway¹. Therefore, oil prices also play an important role in exchange rate determination. The economy is significantly influenced by the exchange rate movements due to dependence on exports from petroleum and other natural resources. This dependence also influences the per capita income of the country and terms of trade. Thus, an exchange rate model that develops a structure explaining the exchange rate movements is useful for developing an understanding of the exchange rate, specifically in the case of Norway. The study contains significance as it provides an exchange rate model based on fundamental macroeconomic factors. The factors are modeled in feedback and nonlinear relationships, thus making the relationship between the exchange rate and the factors more dynamic and close to the real world as opposed to the other statistical static models. The model provides a simple structure explaining the exchange rate movements, which makes it generic and possible to be used for other currencies as well. The forecasts generated by the model have implications for individuals, businesses, and the Government for their long-term decision making that involves the impact of the exchange rate.

The rest of the paper is organized as follows: Section 2 describes the variables and their relationships with the exchange rate. Section 3 discusses the structure of the system dynamics model. Section 4 provides the model calibration and scenario design. Section 5 discusses the implication of the results. Limitations and future research are given at the end

Literature Review

Fundamental Variables in Exchange Rate Determination

The study develops an explanatory model that incorporates the structural causes of the exchange rate behavior. This section discusses the macroeconomic factors modeled in a feedback relationship with the exchange rate as the exchange rate also does influence trade and other key macroeconomic variables of an economy.

¹ <https://www.norskpetsroleum.no/en/production-and-exports/exports-of-oil-and-gas/>

Exchange rate

The exchange rate is one of the critical factors of a country's economic health, trade levels, and portfolio returns. The exchange rate represents the variable of interest aimed to be determined and forecasted through the causalities. The model incorporates the exchange rate for NOK per USD (NOK/USD) using a direct exchange rate quotation. Changes in exchange rate occur due to changes in demand and supply of the currencies (Jeff Madura, 2006). These changes in supply and demand of the currencies are due to various macroeconomic factors (Abbas, Iqbal, & Ayaz, 2012). Thus, the new exchange rate is determined at the equilibrium level, where the supply and demand of the currencies meet.

Interest rate: (International Fisher Effect, Interest Rate Parity)

Interest rate is defined as the rate that determines the charge on the use of money and reflects one of the critical determinants of the exchange rate. It is because the interest rate directly influences the demand and supply of the currency. As per IFE and IRP, the differential in interest rate leads to the difference in the forward exchange rate from the spot exchange rate (Perera, Silva, & Silva, 2018). Higher local interest rate promises a higher return on the local currency relative to other options and attracts more capital from individuals, investors, and foreign capital. Thus, higher local interest rate increases the demand for the currency and impact positively with the appreciation of the local currency and vice versa. The interest rate is used as a tool for monetary policy by the central banks due to its significant role in the supply and demand of the currency.

Inflation: (Purchasing Power Parity)

Purchasing power parity is one of the most controversial and prevalent theories of international financial management (Rogoff, 1996). The theory accounts for the relationship between exchange rate and inflation. The validity of the theory has implications for decision and policymakers of central banks, exchange rate markets, and multinational firms (Jiang, Jian, Liu, & Su, 2016). The implication is that if PPP holds, then nominal exchange rate fluctuations do not affect the trade flows. PPP assumes that the real exchange rate should return to an equilibrium level in the long run and should be mean-reverting (stationary) in the long run. If the real exchange rate is not stationary, it implies that there is no relationship between domestic and foreign prices and nominal exchange rate in the long run and invalidates the PPP hypothesis (Bahmani-Oskooee, Chang, Chen, & Tzeng, 2017). The theory implies that exchange rate adjustment is necessary for the purchasing power to be the same. Otherwise, consumers will shift purchases to wherever prices are lower until power is the same. Inflation is expected to hurt the home currency exchange rate. As inflation rises in a country, exports decline, and imports increase. This puts pressure on the country's currency, and the value of the currency declines (Kuttner & Posen, 2000). Thus, as per PPP, inflation would pressure to adjust the exchange rate until purchasing power becomes the same.

Per capita income

Per capita income influences and is influenced by the exchange rate movements. If the income of a foreign country rises, people would have more money to increase their spending, and imports of a foreign country would rise, resulting in appreciation of the local currency and vice versa.

Terms of trade (TOT)

The exchange rate plays a very significant role in the trade level of an economy. In the same way, exchange rate fluctuations are influenced by the imports and exports of the country as they impact the demand and supply of the currency. When there is an increase in exports, the demand for the local currency will increase, leading to an appreciation of the local currency. When imports increase, it negatively affects the domestic currency as people spend the money to import more goods for consumption. That increases the demand for foreign currency relative to domestic currency and results in deterioration of domestic currency.

$$TOT = \text{foreign exports} / \text{imports} \dots(1)$$

Oil Prices

There has been evidence of the relationship between oil prices and the exchange rate in the literature (Kim & Jung, 2018; Reboredo, 2012). Oil prices play their role in exchange rate movements in the case of Norway as the country is an exporter of oil and gas, with oil and gas being a significant part of the exports. Theoretically, for an oil exporter, oil price shock transfers to the exchange rate through two primary channels. One is through terms of trade, and the other is through wealth effects (Bodenstein, Erceg, & Guerrieri, 2011). When oil prices increase, it positively influences the oil-exporting economy as international profits of the oil firms increase and demand the local currency increase to convert those profits back into local currency. Due to an increase in currency demand, local currency appreciates, and vice versa.

System Dynamics Model

System dynamics methodology is appropriate for modeling the exchange rate movements for multiple reasons. The model accounts for the feedback relationship among the fundamental factors and exchange rate. The Calibrated system dynamics model's forecasts are likely to be more reliable and informative than the other methods. Developing and testing the system dynamics model is an iterative process and includes five significant steps. The first step is problem articulation, which includes identifying the dynamic problem that needs to be solved and the critical variables involved and time horizon. The second step is dynamic hypothesis development that incorporates the details of the problem causing variables and causal loop diagram that incorporates the significant variables and relationships of the variables involved. The third step is the formulation that involves the model building. The relationships need to be defined as per theory and which have real-life meaning such as stocks, flows, auxiliary, parameters such as initial conditions and constants. The fourth step is testing the behavior of the system related to the purpose of the model. When the model is generating the right behavior for the right reasons, there comes the last step of policy formulation and evaluation where various policies or scenarios could be tested and evaluated. But the modeler does not necessarily need to follow these steps linearly and could move to any step forward or back during the modeling process (J. Sterman, 2000). System dynamics modeling allows for the inclusion of nonlinear behavior of the variables.

The purpose is to develop an exchange rate model to determine the exchange rate through fundamental causal variables. Exchange rate fluctuations are a complex phenomenon, and building a simplified explanatory model that replicates the long-term behavior is a challenging task. The model includes the fundamental factors that are expected to play their role in exchange rate fluctuations. Figure 1 summarizes the causal structure of the model. The exchange rate is represented as NOK/ USD. Thus, an increase in exchange rate refers to the depreciation of Norwegian kroner and vice versa. Reinforcing loop (R1) represents the role of expectations in the determination of future exchange rates. Expectations in the market are formed on the previous trends of the exchange rate.

Reinforcing loop (R2) demonstrates the feedback relationship between inflation and exchange rate. Exchange rate depreciation leads to an increase in inflation. An increase in inflation leads to depreciation of the exchange rate next time around. Reinforcing loop (R3) indicates the relationship between exports and exchange rates. Depreciation of the exchange rate impacts exports positively. It is because the products of Norway become cheaper for foreign countries when NOK depreciates. An increase in exports has a positive impact on the economy, and the exchange rate appreciates. When exports increases, the demand for NOK increases and results in an appreciation of NOK. Balancing loop (B1) represents the feedback relationship between the interest rate and exchange rate. When the exchange rate depreciates, interest rate increase to attract more capital as the interest rate is used as a tool to control the currency demand and supply. The inflow of capital has a positive influence on the exchange rate. Balancing loop (B2) accounts for the relationship between imports and the exchange rate. Depreciation of the exchange rate leads to a decrease in imports as they become expensive in terms of local currency. A decrease in imports leads to exchange rate appreciation. High per capita income

indicates the overall strength of the country's economy and has a positive influence on the exchange rate leading to an appreciation of the local exchange rate. When there is an increase in oil prices, it leads to an appreciation of Norwegian kroner and vice versa. Given this feedback structure, the model is simulated to analyze the exchange rate behavior.

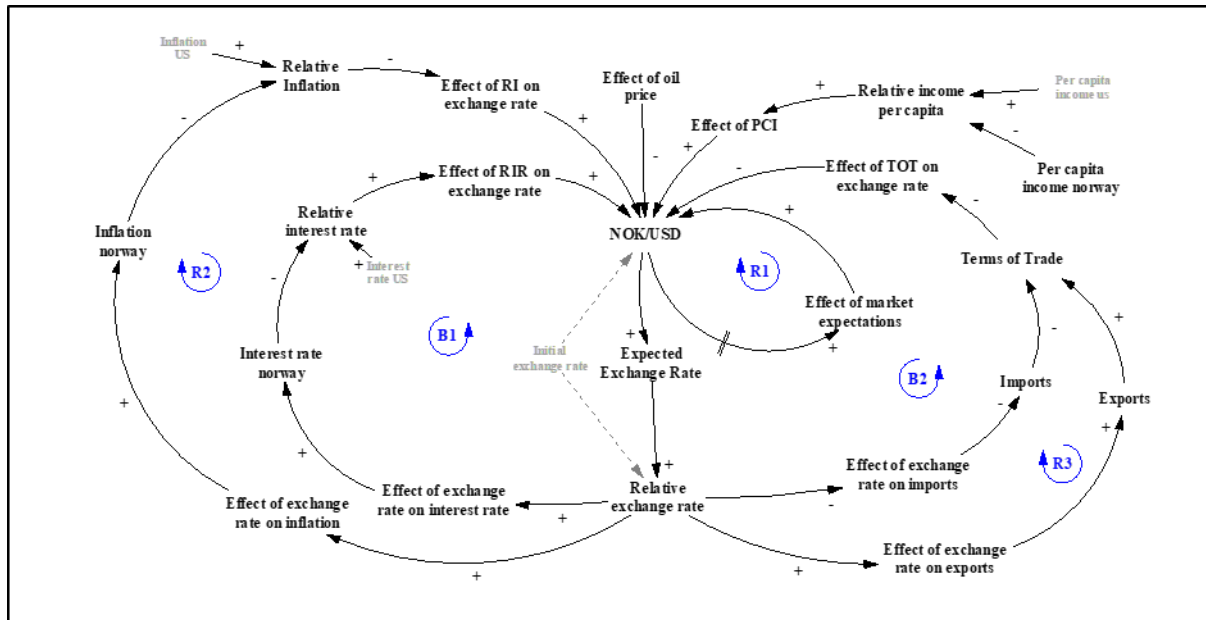


Figure 1 - Feedback structure of exchange rate module

Assumptions and initial values

Developing a simplified exchange rate model that can replicate the past behavior reasonably and provide reliable forecasts requires some assumptions about the model boundary and other elements. Therefore, assumptions are made to make this simplification.

- Only currency NOK is explored in terms of USD. The model does not take into account the interaction of the currency with any other currencies or economies. Thus, the model focuses on a single economy.
- The fundamental variables having the most significant impact theoretically and being the fundamental are included in the model.
- The initial values and historical data for the variables are obtained from secondary statistical resources such as OECD Data² and World Bank data³ etc. The model initializes from 1995 and for the future is simulated until the year 2045.

Model Calibration and Scenario design

The model is used to calibrate the historical exchange rate and then produce the forecasts for the future. As per the system dynamics' rule, the structure of the model should be able to replicate the behavior of the variable

² <https://data.oecd.org/>

<https://www.inflation.eu/>

³ <https://data.worldbank.org/>

being explored for the right reasons. The model has been validated during the development process, and validation tests reveal that the model performs reasonably for these tests. Figure 2 represents the simulated exchange rate behavior in 1995. The simulation outcome reveals that the model is able to capture the long-term trend of the exchange rate reasonably. To further validate the results, statistical significance tests are applied to validate the behavior prediction accuracy of the exchange rate model. Error analysis includes Root Mean Square Percent Error (RMSPE) and Theil inequality tests (J. D. Sterman, 1984). RMSPE estimates the normalized error magnitude, and MSE is a measure of total error between historical and simulated results. Theil inequality is a decomposition of these estimated errors into bias (U^m), unequal variation (U^s), and unequal covariation (U^c). Table 1 reports the figures from error decomposition and Theil inequality tests. The results reveal RMSPE of only 10%, and further decomposition reveals that error is 6% due to bias .03% due to unequal variation and 86% due to unequal covariation. A more substantial portion of unequal covariation reveals that the model is capturing the historical trend, and there is only a diversion point by point (J. D. Sterman, 1984).

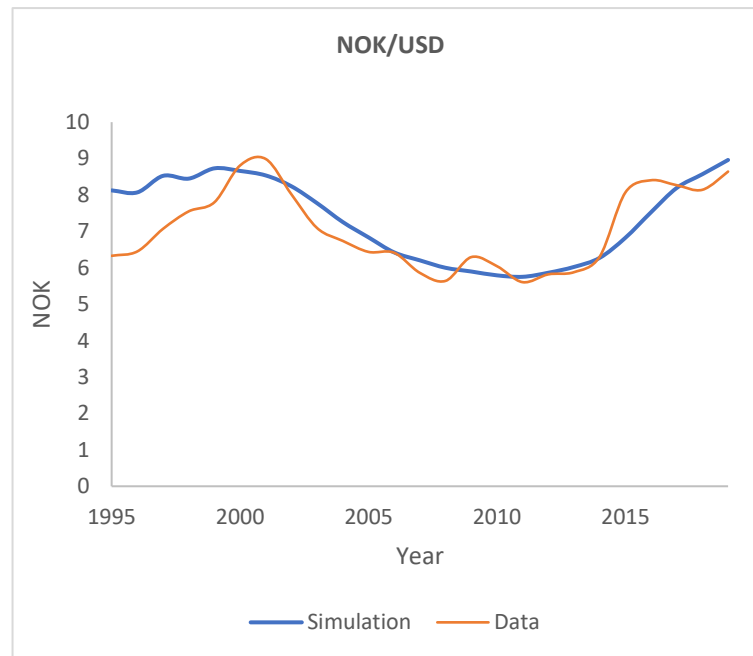


Figure 2 - Exchange rate behavior compared to exchange rate data

Table 1 - Error Analysis

Variable	RMSPE	MSE (units)	U^m	U^s	U^c
NOK/USD	0.108	5.58E-01	0.134	0.003	0.862

Scenario Design

The system dynamics model includes the critical relationships in feedback structure and makes it meaningful and useful to test various scenarios for the future to comprehend and estimate the impact of changes in the exchange rate and other variables of interest (Suryani, Chou, Hartono, & Chen, 2010). Scenarios have been designed to estimate how would the change in macroeconomic variables influence the exchange rate and, in turn, how the exchange rate would influence these macroeconomic variables (Table 2).

Table 1 - Scenarios

Scenarios	Variable	Change
Higher	Interest Rate	2.5%
Base case	Interest Rate	2%
Lower	Interest Rate	1.5%
Higher	Inflation	3.1%
Base case	Inflation	2.1%
Lower	Inflation	1.1%
Increase	Oil prices	+\$10
Base case	Oil prices	\$25
Decrease	Oil prices	-\$10

Scenarios for interest rate and inflation of Norway have been designed and tested to analyze how would any percentage change in one of the variables impact the expected exchange rate. The base case interest rate in 2019 is around 2%; a higher case scenario assumes an interest rate of 2.5%- and lower-case scenario assumes an interest rate of 1.5%. For inflation, base case inflation was around 2.1% in 2019. In a higher inflation scenario, 1% higher inflation is assumed, and in lower inflation cases, 1% lower inflation is assumed. Due to the significance of oil prices in the Norwegian economy and exchange rate, oil price scenarios have also been analyzed to test how would any change in oil prices influence the exchange rate. In 2019, the base case assumed \$25 per barrel. For higher oil prices, a \$10 increase is assumed, and for lower oil prices \$10 decrease is assumed.

Results

Simulation results illustrate the behavior of the variables based on the relationships as predicted by the theory. The simulation result from the base case for reference mode (NOK/USD) is given in Figure 2. Now, the model is simulated into the future to forecast the exchange rate behavior until the year 2045 under the base case scenario, assuming the current trends extrapolate into the future. Figure 3 demonstrates the exchange rate of forecasted behavior.

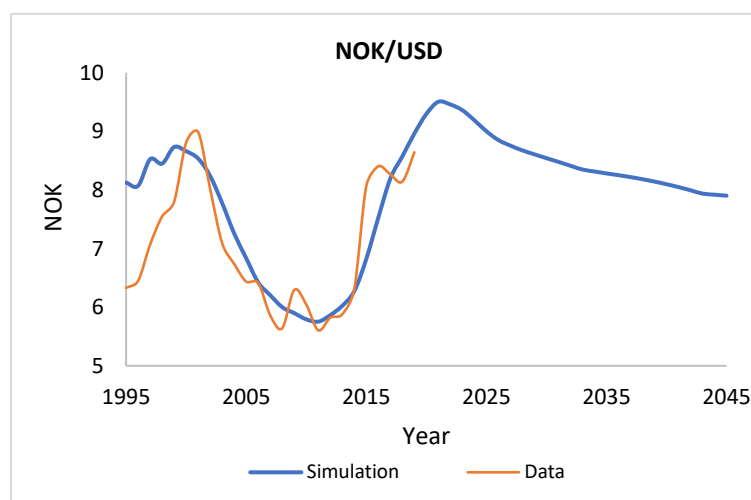


Figure 3 - Exchange rate behavior assuming Base case scenario

Assuming the current trends of significant macroeconomic variables, the exchange rate depreciates to 9.5 NOK/USD in the year 2021. It then starts to appreciate slowly until it reaches 7.9 NOK/USD by the end of the simulation period.

Now the model is simulated to test the scenarios. Figure 4 represents the exchange rate behavior under the assumed interest rate scenarios. The interest rate is the critical variable of interest rate parity theory. The interest rate and exchange rate have a feedback relationship. An increase in local interest rates leads to an appreciation of the exchange rate due to increased demand for the local currency and vice versa. As per the simulation results, a 0.05% increase in interest rate leads to an appreciation of Norwegian currency from 9.2 NOK/USD in 2020 to 8.4 NOK/USD in 2021 and 7.28 NOK/USD in 2045 assuming all other factors as per the base case. As per the lower interest rate scenario, a 0.05% decrease in local interest rate leads to depreciation of Norwegian currency from 9.2 NOK/USD in 2020 to 9.8 NOK/USD in 2021 and 9.03 NOK/USD in 2045.

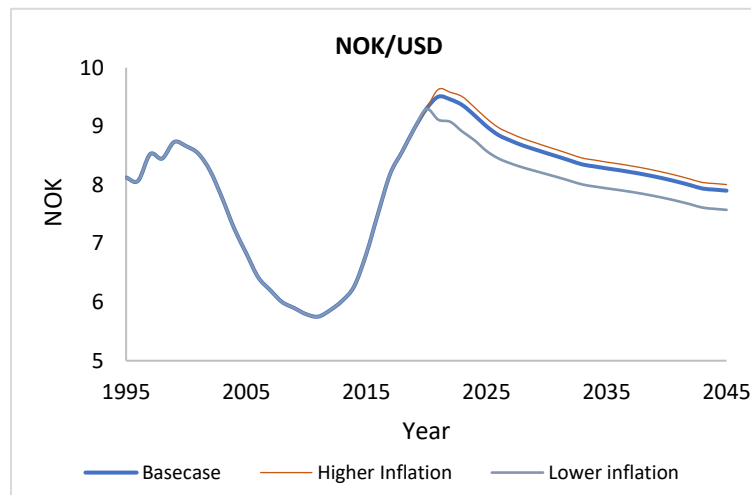


Figure 4 - Exchange rate under interest rate scenarios

Then, the model is simulated to analyze the inflation scenarios. Figure 5 characterizes the exchange rate under inflation scenarios. Inflation is the critical variable of PPP theory impacting the exchange rate. Exchange rates and inflation have a feedback relationship. An increase in local inflation levels leads to the depreciation of the local currency and vice versa. The simulation results reveal that assuming a 1% increase in inflation in the Norwegian economy leads to depreciation of NOK from 9.2 NOK/USD in 2020 to 9.63 NOK/USD in 2021 assuming all other factors remaining same. Lower inflation scenario (-1% than the basecase) reveals an appreciation from 9.2 NOK/USD in 2020 to 9.1 NOK/USD in 2021. This confirms the hypothesis that relative prices of a basket of goods play their role in the determination of the exchange rate.

Finally, the model is tested for changes in oil prices. Figure 6 embodies the exchange rate behavior under oil price scenarios. When there is an increase in oil prices, NOK appreciates, and vice versa. Assuming a \$10 increase in oil prices from the basecase reveals an appreciation of the exchange rate from 9.2 NOK/USD in 2020 to 9.13 NOK/USD in 2021, given all other factors as per base case and by the end of the simulation period it reaches 7.60 NOK/USD. Under lower oil price scenario, which assumes a \$10 decrease in oil prices, the local currency depreciates from 9.2 NOK/USD in 2020 to 9.92 NOK/USD in 2021. It stabilizes until it

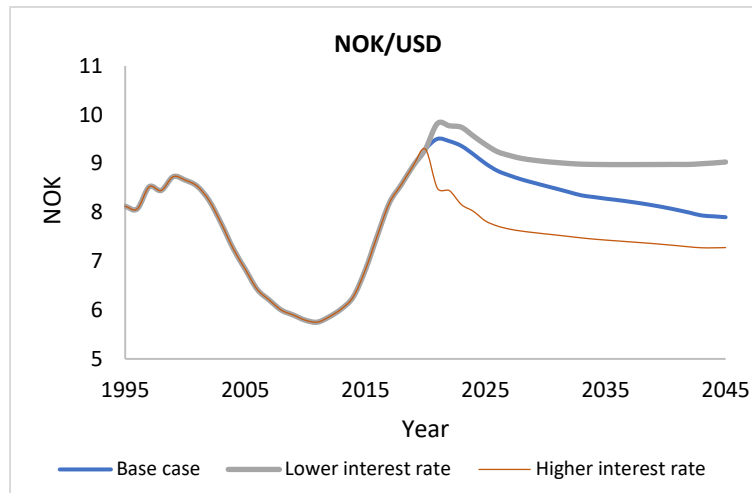


Figure 5 - Exchange rate under inflation scenarios

appreciates to 8.21 in the year 2045. As the country is an exporter of oil, the exchange rate is influenced by the changes in oil prices.

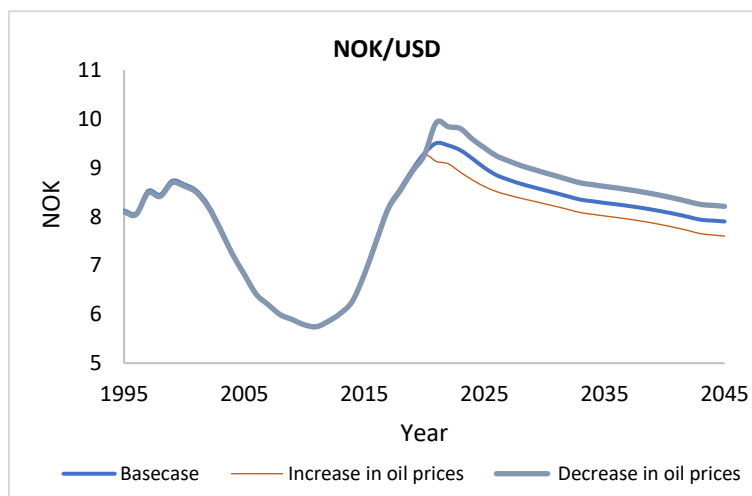


Figure 6 - Exchange rate under oil price scenarios

The simulation results reveal the behavior of the exchange rate is influenced by the key macroeconomic variables as predicted by the theory. Fundamental macroeconomic variables influence the exchange rate and thus can provide long term forecasts for the exchange rate. The study provides empirical evidence on the validity of the PPP and IRP in the determination of the exchange rate.

Conclusion

The objective of this paper is to develop a system dynamics model based on fundamental macroeconomic variables to determine and forecast the exchange rate. Feedback and nonlinear relationships among the interest rate, inflation, oil prices, terms of trade, per capita income, and terms of trade are modeled to calibrate the exchange rate behavior. The simulation results reveal that the variables, as per their predicted relationships by the theory, can replicate reasonable long-term exchange rate behavior. However, some short-term variations might be caused by some other factors or noises. Then, the model is simulated into the future to provide forecasts for the future from long term investments' perspective as the forecasting exchange rate is significant

before making long term international investments. Then, some scenarios, including critical variables such as interest rate, inflation, and oil prices, are tested to analyze how would the changes in these critical variables influence the exchange rate. An increase in Norwegian inflation results in the depreciation of NOK. Whereas, an increase in interest rate has a positive influence and leads to the appreciation of the exchange rate. Oil price shocks impact the NOK, and an increase in oil prices is definite in the case of NOK as the country is an exporter of oil. The model explains and provides a simplified and generic model of the exchange rate determination based on fundamental macroeconomic variables.

The exchange rate is a significant economic variable. The study provides a simplified simulation-based model for the exchange rate for better understanding and forecasting of the exchange rate from a long term perspective based on fundamental theories. The study has practical implications for individuals, businesses, and the Government because they are all influenced by the exchange rate movements. The study has implications for investors accurately as based on the predicted exchange rate; they can hedge their exchange rate risk. The study also has implications for monetary policies as the study elaborates on the relationship of two primary monetary policy tools, interest rate, and inflation with the exchange rate.

Limitations and Future Research

The study has certain limitations. The study relies on fundamental variables only to forecast the exchange rate. The exchange rate model could further include other models of exchange rate determination and make a comparison to better forecast the exchange rate and get insights. The model could also be extended to include further economies.

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Social Influence And Savings Behavior: Evidence From A Developing Country Context

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Abstract

Purpose: This paper highlights the relevance of Savings Behavior and the impact of Social Influence on Savings Behavior in a developing country utilizing both life cycle and economic theories

Methodology: This paper presents findings from a thorough review of the literature. Relevant articles were reviewed on both savings behavior and social influence. The articles consisted of both contexts developed versus developing.

Findings: The findings suggest that from the developed country context, Social Influence positively affects Savings Behavior, which is not the case for the developing economies that show the negative impact of social influence on savings behavior. Therefore, financial education and literacy training are two of the means of encouraging individual self-control in these developing economies despite their vulnerability to social influence to encourage positive savings behavior.

Implications: Individuals are encouraged to save, especially during their productive ages, along with their lifespan. This can be done by obligatory deductions for those that are officially employed.

Originality/Value: This paper reveals a bibliography theoretical review on Social Influence and Savings Behavior within the developing country context. The paper presents the puzzle about the effect of Social Influence and Savings Behavior in the emerging economy. The majority of savings behavior research undertaken in the developed economies shows the positive effect of social influence on savings behavior, which is not the case in the developing economies.

Introduction

Savings behavior is a critical requirement for individuals to help them find out how to solve potential future financial decisions on their own by learning and rehearsing sound financial abilities in their lives. Saving instills control among the individuals from the consumptive manner and learning on how to spend wisely (Ariffin, Sulong, & Abdullah, 2017). To demonstrate an appropriate savings behavior does not “come overnight” but can be attained through the social influence of family, friends, and colleagues by way of nurturing, mentoring, and sharing of information concerning money management practices. However, putting money aside for the future is a complex decision that warrants a good savings behavior (Gerhard, Gladstone, & Hoffmann, 2018).

This research adopts the principle of Gerhard et al. (2018) that savings behavior is a mixture of future needs expectations, saving action that leads to better wellbeing and wealth creation. Savings are, therefore, vehicles destined for economic growth, whose future drivers are individuals making their savings behavior principal in any economy (Khatun, 2018). This research reviewed articles that are unusual in studies in the developing world linked to social influence and behavior.

According to (World Bank., 2017), the global saving rates percentage of Gross Domestic Product (GDP) are as follows; East Asia & Pacific at 45%, South Asia 32%, North Africa at 23%, Europe & Central Asia at 23%, Canada at 19%, the United States at 18%, Latin America at 17% and Sub Saharan Africa at 14%. Saving rates have steadily increased in East Asia, have stagnated in Latin America and have been volatile in Sub-Saharan Africa, North Africa, and have deteriorated in South Africa, and have steadily increased in West Africa (Kudaisi, 2013). Furthermore, the World Bank. (2017) States that developing countries saving rates are low, which in turn affects their level of investment. The world has experienced a marked difference in saving rates over the last three decades, and this has been particularly dramatic in African countries. According to Deaton (2005) and the World Bank. (2017) Africa generally has the lowest saving rates with a constant decline over the past three decades, and this has negatively impacted the economies with slow growth. Africa is seen to perpetually have low saving rates (Elias & Worku, 2015).

According to the 2011 Global Findex survey, for example, a quarter of the most deficient 40 % of households in Sub-Saharan Africa do not have bank accounts (Demirguc-Kunt, Klapper, Singer, & Van Oudheusden, 2015). Approximately 44 percent of teenagers between the ages of 17 and 25 and 11 percent between the ages of 40 and 55 are victims of consumptive behavior (Herawati, Candiasa, Yadnyana, & Suharsono, 2018).

Most research focused primarily on the direct effect of social influence on savings behavior in developed countries and mostly found significant effects (Dangol & Maharjan, 2018; Erskine, Kier, Leung, & Sproule, 2006; Jamal, Ramlan, Karim, & Osman, 2015). Many of these studies were done in the developed world, excluding the developing context, which is addressed by this research. Further still, there has been limited research in the area of savings behavior at the micro-level, particularly for an individual (Supanantaroe, Lensink, & Hansen, 2017; Tharanika & Andrew, 2017). This study attempts to close the limited research in the area of savings behavior at the micro-level, particularly for an individual more so in the developing country context (Supanantaroe et al., 2017; Tharanika & Andrew, 2017). The majority of the research has focused on saving behavior at the macro level, an example being a study by (Kaberuka & Namubiru, 2014) on the effect of remittances on gross domestic savings in Uganda. However, studies regarding Saving Behavior at the micro-level is limited in the Sub-Saharan African countries (Asare, Segarra, Gertrude, & Asiseh, 2018). An example of such a study was on the determinants of household savings among low-income individuals in rural Uganda, whose primary focus was on households' saving behaviors by Chowa, Masa, and Sherraden (2012). The saving behavior of an individual is justified as part of the social environment of any society. It is supposed to be successful, thus boosting the growth and development of the economy. To achieve the right saving action, it is important to look at the social context in which the individual resides.

This article, therefore, has two specific objectives;

1. To examine the relevance of Savings Behavior in developing countries
2. To establish the impact of Social Influence on Savings Behavior in developing countries

In the subsequent section, we track each specific objective to enhance acceptable individual savings behavior. The purpose of the study is to demonstrate the relevance of saving behavior in the developing country context. This paper reviews literature to accomplish the mentioned objectives. The article is structured as follows; in the following section, we examine the theoretical framework, then a debate on the relevance of savings behavior, followed by a discussion on the effect of social influence on savings behavior, applied methodology, findings, and discussions. The article concludes with findings, recommendations, theoretical and practical implications, and, lastly, future research areas.

Literature Review

Theoretical Underpinning Of Savings Behavior

Savings Behavior can be seen at both the household and national levels. The saving activity at the household level is mainly for consumption or retirement purposes. The household savings behavior is explained by the Lifecycle Hypothesis, while the national saving is explained by the economic theory. These theories are examined in the following section

Lifecycle Hypothesis (LCH)

The lifecycle hypothesis (LCH) by Modigliani and Brumberg (1954) and later in Ando and Modigliani (1963) proposes that households seek to optimize utility derived from their lifetime resources by allocating them optimally between current and future consumption. Lifecycle theory suggests that the primary motivation for investing is to accumulate money for later consumption and, in particular, for retirement. In its simple wording, the lifecycle theory suggests that savings behavior is forward-looking and driven by a desire to plan for future spending above future incomes during life. The lifecycle hypothesis posits that the primary motivation for saving is to accumulate resources for later expenditure and, in particular, during retirement. In its basic formulation, the lifecycle hypothesis posits that savings behavior is forward-looking and driven by the desire to prepare for future expenditures above later income throughout life (Jappelli & Modigliani, 1998). Several saving motives were listed by Keynes (1936). Most of these motives have now been incorporated into the lifecycle model (Modigliani & Brumberg, 1954). In this model, saving depends entirely on current income, with households saving only a portion of that income. Early versions of this model explain the old-age provision motive as the main saving motive: individuals save while working to counteract the income drop at retirement. The basic version of the lifecycle model has been extended to include also other saving motives, most prominently the precautionary savings motive. Precautionary saving can explain a large share of individual and aggregate wealth accumulation (Gourinchas & Parker, 2002).

The Lifecycle Hypothesis (LCH) also indicates that households seek to maximize the use of their lifetime resources by making optimal use of them between current and future use. In the Keynesian model, saving depends entirely on current income, with households saving only a portion of that income. Modigliani (1970) demonstrates how the saving ratio of households is independent of income. Instead, it depends on the rate of long-term income growth. However, the validity of the LCH hypothesis for developing countries has been questioned. The model of savings behavior may not extend to low-income countries, because low-income people may not be able to save enough while young and active to support old-age consumption as the model suggests.

Economic Theory

Early theories of economic growth have shown the importance of savings as a source of capital accumulation and, therefore, of growth. Economic theory has long argued that saving or capital accumulation is the primary determinant of economic growth that can be interpreted as a sustainable long-term rise in the country's income (Geda & Shimeless, 2006). The high rate of capital accumulation, funded by high domestic savings rates, is at the core of many classic models of economic growth.

Domestic savings are, therefore, an important indicator and a prerequisite for higher levels of growth. Solow's standard growth model, which underlines the importance of savings in economic growth, indicates that higher savings rates precede a temporary increase in inflation as the country moves toward a higher level of growth. In this and many other classic growth models, higher savings are expected to turn into faster capital stock growth, thereby increasing economic growth (Bonga-Bonga & Guma, 2017).

The Relevance Of Savings Behavior To Households

Household savings have drawn considerable interest in the literature on economics, with a particular focus on the different reasons for saving conduct that is possibly complex and interrelated. Browning and Lusardi (1996) provide a comprehensive review of household savings from both an empirical and a theoretical viewpoint, in which they address savings motives based on those described by Keynes (1936). Such motivations include precautionary saving where households keep a contingency fund in the event of future adverse events; smoothing income and expenditure over the life cycle; and inter-temporal replacement motivation for which households benefit from accumulating savings interest (Brown & Taylor, 2016).

Saving is a delayed investment; savings have always been studied concerning the smoothing actions of consumption. This is because the decision of households or individuals to consume or save is a joint family decision. In case households save too little, they might face financial difficulties in addition to having deficient emergency savings, which, in turn, will increase anxiety and leads to serious health problems (Prawitz et al., 2006). From a broader perspective, there will be insufficient funds available for the government to invest in social and physical infrastructure. It has been further argued that (micro) savings products are probably one of the best financial instruments to reduce poverty.

Savings are vital because, unlike income, saving helps individuals to accumulate and hold on to wealth over time. Typically, people's savings behavior relies on their present income and their present level of consumption (Awais, Laber, Rasheed, & Khursheed, 2016). There is also growing evidence that poor people are, in principle, able and willing to save. However, for several reasons, among which is a lack of financial knowledge, lack of self-control savings remains limited. To improve savings behavior, there is a strong need to encourage a better savings culture. According to many people, it is crucial to improve the savings culture of people and thus to develop savings attitudes at a young age (De Noose, 2011).

At an individual level, savings smoothen the individual's consumption patterns, thereby improving on their welfare among others as well as enhancing the economic growth of a nation, through the provision of the lump sum for investment at the macro-level (Supanantaroe et al., 2017).

National Benefits Of Savings Behavior

Most conventional growth models indicate that higher savings rates lead to higher growth by growing the pool of domestic capital available (Romer, 1986; Solow, 1956). It promotes a faster accumulation of physical capital, which is known to be the driving force of economic growth. Over the past decades, saving has played an essential role in the process of economic growth and development. Logically, saving stimulates investment that causes a single country's economic growth. Domestic savings are, therefore, an important indicator and precondition for higher levels of growth. The speed of economic growth is determined by the ability to save

because a high savings rate will drive up the rate of investment and consequently stimulate economic growth (Turan & Gjergji, 2014).

A growing literature emphasizes the crucial role of savings in the process of economic growth in addition to them providing lump sums for investments that enable households to build up a financial safety net and hence may serve as an insurance mechanism (Dupas & Robinson, 2013). Also, the domestic savings of a nation ensure that the vulnerability of a country's dependence on foreign capital is reduced (Njenga, Onuonga, & Sichei, 2018).

Savings play an important role at different levels of the economy where households, companies, and government, when carefully interlinked, jointly contribute to the economic growth of the country. This aggregated saving decision is the primary determinant of national saving (Geda, 2006). Funds that are placed in financial assets are channeled through financial intermediaries for investments, and subsequently, enriching the country through higher productivity and economic growth. It is argued that the speed of long-run economic growth depends on the ability to save since a high savings rate will increase investments, affect the capital accumulation and consequently stimulate economic growth (Joshi, Pradhan, & Bist, 2019).

High savings leads to accumulation of wealth that allows individuals to improve their living standard and could hedge the country against economic downturns and financial crisis, insuring against the time of economic shocks and an essential way of improving wellbeing (Mahdzan & Tabiani, 2013). In some countries, savings are considered as the backbone to specific sectors of its economy. In other nations, for instance, household savings is regarded as the most critical investment resource for the development of the non-oil sector, while its foreign capital is contributing more to the production of natural resources like oil and gas.

To summarize, individual savings will not merely benefit households but benefit the entire nation, as well. Therefore, it is essential to know factors influencing individuals' savings behavior as it is essential in maintaining economic growth since it will give benefits to the entities involved, such as households, financial institutions, government, and other related stakeholders. Hence savings play an essential role in both a nation and individual financial wellbeing (Findley & Caliendo, 2015; Gerhard et al., 2018; Otto, 2013).

The Impact Of Social Influence On Savings Behavior

Social Influence has both positive and negative effects on human behavior. This is based on the fact that Social Influence allows both a group and an individual to achieve a mutual or individual goal. Nevertheless, the Social Influence may instead make sub-optimal decisions for individuals (Kast, Meier, & Pomeranz, 2018). The previous studies undertaken indicate that Social Influence is active at increasing savings among individuals (Homan, 2016). This is achieved through strategies that include: setting goals, regular follow-up to meetings, peer pressure from others, monitoring the success of others, symbolic incentives for those who perform well, and guidance on how to accomplish one's goal. SI entails the influence of others' behaviors, depending on the social environment around them. Social influence involves the exercise of social power by a person or group to change the attitude or behavior of other persons or groups in a particular direction (Franzoi, 2006). Mangleburg, Doney, and Bristol's (2004) study, as quoted in Zaihan (2016), views social influence as the degree to which family, friends, and colleagues affect the state of mind, thinking and conduct of the person.

Hira (1997) indicated that the most important sources of influence on the financial attitudes and beliefs of respondents were identified among the various socialization agents, family in general, mothers, and fathers in particular. According to Firmansyah (2014), children inherit the attitude and behavior of their parents, and this can predict the type of financial decisions and management that they will make in the future. Money values are passed down from parents to children through direct and indirect messages. Besides, Lyons (2007) found that about 68 percent of individuals reported receiving financial information from their parents. Bowen (2002) also

found that there is a significant link between adolescents' and parents' understanding of money. Social influence involves the exercise of social power by a person or group to change the attitude or behavior of other persons or groups in a particular direction (Franzoi, 2006). Several kinds of literature acknowledged the role of parents as the key to their children's financial socialization, in which parents are highly influential in developing their children's financial behavior. Thus they should become role models to their children in managing their financial affairs (Sam, Geetha, & Mohidin, 2012). Webley and Nyhus (2006) further added that economic socialization (namely discussing financial matters with parents) would have an impact on children's future orientation

Children who have a good relationship with their family are more likely to be future-oriented and have good financial behavior. Shim, Barber, Card, Xiao, and Serido (2010), discovered that the role played by parents is significantly greater than the role played by working experience and high school financial education of young adults. A set of supportive social support from parents and family members are crucial in helping young adults and adolescence achieve their successful adult life. When parents displayed positive financial behavior, they will become financial role models to their children and will trigger positive attitudes and behavior amongst young adults. Savings' decisions are complex, requiring individuals to have substantial economic knowledge and information. This may, therefore, be the case that parents with a certain degree of financial literacy may try to impart these skills to their offspring to equip them with financial management skills for the future. As a result, children and young adults may develop financial attitudes from their parents. Saving decisions during childhood will affect attitudes towards finances at the later stages of the life cycle and therefore have consequences for saving actions experienced during adulthood (Brown & Taylor, 2016).

Norvilitis and MacLean (2010) revealed that parents who provide a hands-on approach to teaching their children about money management, allowances, and bank accounts motivate them to lower their credit card usage in college. The researchers further added that childhood is the most crucial period that will influence an individual's behavior and attitude during adulthood. Therefore, parents play an essential role in influencing children in managing their financial affairs. Besides parenting factors, peer influence could also predict individuals' financial behavior. Duflo and Saez (2002) found out that people with similar preferences tend to belong to the same group, thus creating a correlation between the group and individual behavior.

Buccioli and Veronesi (2014) suggested that parental teaching is more effective than receiving formal education at school, and based on different socio-demographic variables, they show different behavior. The parental teaching method determines the ability to meet financial issues in the future, and it is more effective, especially when different teaching methods are combined. The most effective strategy is teaching to save during childhood and adolescence.

Similarly, a study by Jamal et al. (2015) showed that the impact of colleagues has a critical role in choosing the saving capacity of a person. Zaihan (2016) found that even though the parents or guardians have formed positive financial behavior in their children, peer socialization angle still exists in an individual's savings behavior since savings behavior of individuals could be influenced by the association in spending exercises during the social time and exchanging ideas about financial management matters among their peers. (Jamal et al., 2015) Stated that peer influence could also affect the financial behavior of individuals. Alwi, Amir Hashim, and Ali (2015) indicated that when making choices, people are affected by peer pressure. Moreover, Laible, Carlo, and Roesch (2004) stated that an individual's behavior is acquired from direct and indirect interaction with their friends.

Dangol and Maharjan (2018) opined that both peer and parent remain as potent socialization agents that determine the behavior of adolescence in the future. Their needs were often derived from desires than financial needs. From childhood, they imitated what their parents do. People who discuss financial problems with parents had better skills to fulfill their financial needs. Young people also learned from direct and indirect interaction with peers; through discussions, rulemaking, reinforcement, and modeling.

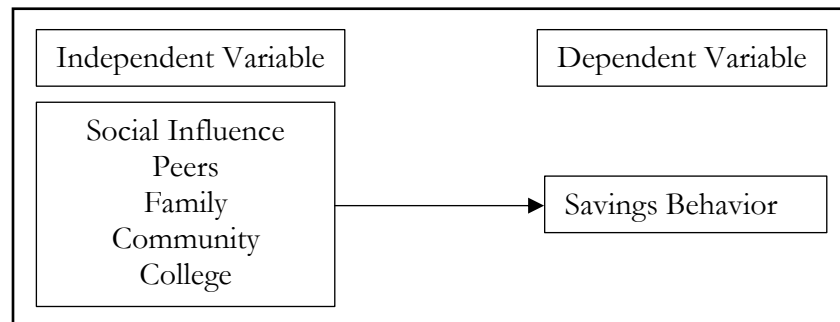


Figure 1 - Conceptual Framework

The philosophical model above suggests that Social Impact encompasses friends, families, society, and college. These affect the behavior to save a person. In the context of developing countries, people save in various forms, including cash, cattle, land, crops, and so on.

Data and Methodology

Only English-language papers in core journals were included in our sample. The literature reviewed included articles on both social influence and savings behavior within the period of 1996 to 2019. Given our search criteria outlined below, some 520 papers were reviewed. The primary sources of research include the Citation Index for Social Science, JSTOR, and Google Scholar. Many of these publications were published in a full-text format where it was feasible, or copies were requested through the inter-library system. The criteria for selecting the articles were based on the key search words of social influence and savings behavior.

Only relevant articles were used in the review and further analysis. The rationale behind the journal selection is on the assumption that savings behavior contributes to both the entrepreneurial and behavioral finance discipline that is a necessity in developing countries.

Findings

Puzzle In The Developing Country Context: Social Influence And Savings Behavior

A great deal of savings in the African context is seen through the impact of social capital, which is mainly evident among the unions, as information transmitted through these organizations increases the proportion of liquid assets held in the form of deposits that yield a return. However, the extent to which households can access financial products, in particular deposit products, is a vital issue for developing countries. For low-income households, there may be many barriers to savings in formal financial institutions other than access, including lack of knowledge or information that could lead to mistrust and uncertainty about available returns. In a general sense, the role of social networks in developing countries is well known. Most empirical literature identifies interpersonal relationships between members within villages or communities as an effective means of eliminating information failures, thereby encouraging saving (Newman *et al.*, 2012).

In developing countries, limited access to formal financial institutions means that individuals and households rely mainly on informal networks to create savings. These informal saving strategies include saving livestock or

jewelry, saving at home' under a mattress, saving with a neighbor or, in a more organized way, engaging in the Rotating Savings and Credit Associations (ROSCAs). Nonetheless, in developing countries that are vulnerable to unforeseen events such as health degradation, the death of a family member, overwhelms and scares the few savings that would have accrued, thereby hindering economic activity and growth (Ky, Rugemintwari, & Sauviat, 2018).

The majority of people in Africa are not using Social Influence to save but rather to spend. This is more evident among college students who, with more experience and socialization, may develop poor habits and attitudes as a result of these influences, as well as gain some basic knowledge for better financial management, which could explain the mixed effects of these influences on savings and the consequent financial problems (Sabri & MacDonald, 2010).

In most developing countries, the majority of the population is poor and can access funds through ROSCAs. Individuals involved in ROSCAs frequently configure the startup date by the date they are allocated to obtain the pot, as many ROSCAs use a predetermined order to distribute the savings pot. Since these saving strategies involve taking high risk, most individuals in ROSCAs are disbanded by obtaining their share of the pot, often without notice, thus preventing the savings culture (Ky et al., 2018). Likewise, in cases where individuals engage in ROSCAs, since there is a generally predetermined order, it is impossible to access the money immediately when an emergency arises. In such situations, some people turn to their relatives for support, thus deterring their saving actions. Worse still, if relatives do not have liquid funds, they turn to sell their properties (Collins, 2009).

Young people are the most significant proportion in Sub-Saharan Africa. Parents, peers, school staff, and financial institutions are offering support to this vulnerable group in promoting financial inclusion through savings that are an international priority. This can be achieved through savings promotion programs. Financial inclusion is vital for economic and social development and the reduction of poverty. Increasing evidence indicates that financial inclusion for young people, in particular engagement in savings programs, is associated with a wide range of positive outcomes in areas such as health, education, social-emotional development, and financial wellbeing.

Financial education in schools or financial institutions is essential for building trust and promoting savings. Nevertheless, in addition to limited funds and competing demand for money, this group of individuals is negatively influenced by peer influence, thereby discouraging saving. Also, school administrators fail to provide encouragement or guidance to youth, thereby missing the opportunity to save (Zou *et al.*, 2015). Using mobile money, individuals can easily exchange cash for e-money or vice versa with mobile money agents across the world. Once the deposit has been made, they can either keep it safe on their mobile phone as savings or move the balance via SMS to any other mobile phone in the country or abroad. Mobile phones are seen as an opportunity to provide essential banking services to poor people who have fewer alternatives than rich people. However, the liquid savings option provided by mobile money, which can be accessed anywhere and at any time, could increase family assistance and could, therefore, harm individual savings. This is aggravated by the withdrawal tax feature of mobile money, which may help people withstand unnecessary spending on the one hand, but may discourage them from putting money in their account and, on the other hand, discarding its effects on savings (Ky et al., 2018).

Discussion

Relevance Of Savings Behavior To Developing Economies

In this review of literature, it has been established that savings behavior is relevant among people in the developing economies. Accumulated savings accumulate capital that can be used in financing business startups,

health care, and educating the family. These human development indicators are essential in the economic development progress of a country. This is in line with studies by (Sinclair & Singh, 2015), where savings are the best intervention for poor households in emerging economies. The study highlights that savings improve household wealth and individual wellbeing through increasing an individual's income, investments, and wellbeing. Savings behavior also improves the protection and wellbeing of vulnerable communities in developing economies.

Impact Of Social Influence On Savings Behavior In Developing Countries

The literature reviewed in this study found that there is a negative impact of social influence on savings behavior in developing economies. It is focused on the fact that most poor people use informal environments (social networks) that are of high-risk, high-cost, and are limited. This, in turn, has contributed to weak savings compared to economies without behavioral frictions. The lack of saving has led to welfare consequences to include variable consumption, low resilience to shocks, and foregone profitable investments (Karlán, Ratan, & Zinman, 2014). This resonates with the findings of Ky, Rugemintwari, & Sauviat (2018), who noted that developing economies are surrounded with unforeseen events such as health degradation, the death of a family member, overwhelms and scares the few savings that would have accrued, thereby hindering economic activity and growth.

Conclusion

Individual savings behavior, which is inherently tricky, allows one to possess essential skills along with a positive impact on their social ties (Jamal et al., 2015; Khatun, 2018). The social context of individuals in developing countries contributes significantly to savings behavior. However, the same social context impairs the financial behavior of individuals in developing countries, given the high level of responsibilities that range from burial contributions, wedding ceremonies, among others. Financial education is one of the main tools for enhancing people's saving attitudes. As a result, providing financial education and training to individuals could mitigate the effects of bad financial habits and attitudes that could be acquired from others. In other words, training may help all kinds of people, including those who might otherwise be considered to be more financially competent and less in need of that kind of training. However, they may be more susceptible to social influence. Using financial education—financial literacy training—individuals should get acquainted with the concept of savings and can learn how to manage money in and outflows. To ensure appropriate savings behavior, an integrated approach involving other factors, such as instilling self-control among individuals, is required.

Theoretical Implication

This study demonstrates that Life-cycle theory can guide people to manage to spend. Individuals are encouraged to borrow during low-income times and save during cycles of high income. This implies that future studies on savings behavior should utilize life cycle theory.

Practical Implication

In practice, the Life cycle theory should be utilized where people are encouraged to save in various forms, which include assets such as land, animals, among others. Given the informal nature of businesses in the developing world and the various sectors of engagement, such as animal husbandry, poultry, and crop farming. Saving is necessary at all stages of one's life span through more effort should be made during one's young productive ages. This is more vivid in developing countries where, given the forces of social influence that cause uncalled for expenditure, the majority of active youth have to save part of their income during their productive years. Individual accumulated savings should be encouraged since it contributes to capital accumulation that supports a country's economic growth

Managerial Implication

Managers should sensitize their workers on the advantage of the saving. Where possible, managers should deduct an agreeable percentage on their earnings on the source to be saved regularly. This accumulated saving can be useful at retirement

Areas for Future Research

Future studies should explore the other determinants of Savings Behavior other than Social Influence discussed in this study. An empirical study on the effect of Social Influence on Savings Behavior is recommended. Lastly, a comparative study in various contexts on the effect of Social Influence and Savings Behavior can be undertaken.

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